**Appeal No. 2014-1327**

# In The United States Court of Appeals For The Federal Circuit

BEST KEY TEXTILES CO., LTD.,

*Plaintiff-Appellant,*

—v.—

UNITED STATES,

*Defendant-Appellee.*

Appeal from the United States Court of International Trade
In Court No. 13-00367, Senior Judge R. Kenton Musgrave.

## NON-CONFIDENTIAL APPELLEE'S SUPPLEMENTAL APPENDIX

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**BEST KEY TEXTILES CO., LTD. v. UNITED STATES**
**APPEAL NO. 2104-1327**

**The material that has been redacted consists of business proprietary information of Best Key Textiles Co., Ltd.**

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**UNITED STATES COURT OF INTERNATIONAL TRADE**

**BEFORE: HON. R. KENTON MUSGRAVE, SENIOR JUDGE**

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**PROTECTIVE ORDER**

Plaintiff and defendant, by their respective counsel, do hereby jointly stipulate and agree to this protective order (Protective Order), subject to the approval of this Court, pursuant to Rule 26(c) of the Rules of the United States Court of International Trade (CIT), restricting the disclosure of confidential information produced in connection with this action.

1. For purposes of this Protective Order, "documents" shall mean writings, drawings, graphs, charts, photographs, sound recordings, images, other data or data compilations, and any other tangible thing used to preserve, convey or communicate information — stored in any manner and/or medium, from which information can be obtained either directly or, if necessary, after translation by the responding party into a reasonably usable form. Such documents include, but are not limited to, all written, recorded or graphic matter of any nature whatsoever, interrogatory answers and documents produced in connection with this action, transcripts of and exhibits to depositions taken in this action, and, any portions of any documents filed in this action which quote from or summarize any of the foregoing documents.

2. A. For purposes of this Protective Order, "Confidential Document[s]" will mean all documents which are designated as "Confidential" by the person or party producing them in connection with this action. Confidential designation is to be made by stamping or otherwise inscribing "Confidential," "Produced Subject to Protective Order," or other similar language, upon the document itself. The designation of a document as "Confidential" means that the entire document is confidential. Where less than the entirety of a document contains confidential information, the producing person or party will provide an unreadacted copy that states "Contains Confidential Information" for each affected page of the document along with a redacted copy of the document. Where white space is used to provide a redaction, the affected page of the document shall include the word "redacted" at the site of the redaction. If redactions are made by blacking out the redacted information, then the word "redacted" shall not be necessary. The portions of redacted documents that are not Confidential are not restricted by this Protective Order. No document or information may be designated as "Confidential" which is available to the general public. If a document that is available to the general public is designated as "Confidential" by any party, that designation shall have no effect.

B. With respect to deposition testimony, counsel shall advise, on the record of the deposition or by written notice to counsel for all parties within 72 hours after receipt of the deposition transcript, that the transcript contains confidential information. Thereafter, but no later than 30 days after receiving the transcript, counsel claiming confidentiality shall designate portions of the deposition

transcript, including exhibits, as "Confidential" in accordance with the terms and procedures outlined in this Protective Order. All copies of a deposition transcript containing confidential matter will be prominently marked "Confidential" on the cover and, if filed with the Clerk of the Court, will be filed under seal, as provided by CIT Rule 81(h) and Administrative Order 02-01.

3. If a party obtains a document outside of this litigation that was not previously designated as confidential when obtained but has been designated within this litigation as "Confidential" then such document shall not be the subject of this Protective Order.

4. Confidential Documents or information contained therein may be referred to in interrogatory answers, motions, and briefs, and may be marked as deposition or trial exhibits in this action. To the extent that any Confidential Document or information contained therein is filed with the Clerk of the Court, it must be appropriately marked in accordance with the Protective Order and filed in accordance with CIT Rule 81(h) and Administrative Order 02-01.

5. Except with the prior written consent of the producing person or party, or as set forth in paragraph 7, no document or information designated as Confidential may be disclosed to any person other than:

A. Counsel for a party in this action who are engaged in the conduct or preparation of this action or any appeal from a decision in this action.

B. Secretaries, paralegal assistants, and clerical personnel who are engaged in assisting counsel, as described in item A of this paragraph, in the preparation of this action.

C. Employees of a party in this action (other than those described in subparagraphs A and B) who are engaged in assisting counsel in the conduct of this action.

D. Authorized personnel of the Court of International Trade and court reporters/stenographers.

E. Those persons specified in paragraph 7 who meet the conditions of that paragraph and paragraph 8.

6. Any deponent may be shown or examined on any information, document or thing designated as Confidential if the witness authored or received a copy of it, was involved in the subject matter described therein or is employed by the party who produced or received the information, document or thing, or if the producing person consents to such disclosure.

7. Confidential Documents may be shown to consultants and experts who are assisting in the preparation of this action on the condition that, before disclosing any confidential information, the disclosing party obtain (1) a signed certification from the consultant or expert stating he or she is not affiliated with any manufacturer or vendor of competitive merchandise, and (2) an agreement in writing to be bound by the provisions of this Protective Order (in the form of Exhibit A hereto). Confidential Documents may be shown to third party consultants and experts who are affiliated with manufacturers or vendors of competitive merchandise only with prior written consent of the party that produced the confidential information, or upon order of the Court. For the purposes of this paragraph, the term "affiliated" shall be construed to mean a person currently employed or contractually obligated with/to a manufacturer or vendor of competitive merchandise.

8. Except for persons described in Paragraph 5, subsections A, B, C, D, and E, no person authorized under the provisions of this Protective Order to receive access to Confidential Documents will be granted access to them until such person has read this Protective Order and agrees in writing, in the form attached as Exhibit A, to be bound by its provisions. Counsel for the disclosing party shall be responsible for maintaining a list of all such persons to whom such documents are disclosed as well as copies of agreements signed by them. For good cause shown, such list and agreements will be made available for inspection by counsel for the producing party on order of the Court.

9. In the event the receiving party disagrees with the producing party's designation of confidentiality, the receiving party shall so advise the producing party in writing, and the producing party shall thereupon have twenty (20) days in which to withdraw the claim to confidentiality or otherwise resolve the disagreement, or move the Court to resolve the disagreement. During the pendency of any such motion, the receiving party will not disclose the information or documentation that is the subject of said motion.

10. Upon conclusion of this litigation, including such appellate review as may occur, documents designated Confidential and all copies of same (other than exhibits of record) will be destroyed by the receiving party; or alternatively, if requested by the producing party, such documents and copies (other than exhibits of record) will be returned to the producing party at their request, other than copies containing work notes of counsel or other authorized persons, which will be destroyed.

11. Inadvertent or unintentional production of documents that should have been designated as Confidential Documents shall not be deemed a waiver in whole or in part of the party's claims of confidentiality.

12. If any provision of this Protective Order shall be held invalid for any reason whatsoever, the remaining provisions shall not be affected thereby.

13. Upon motion of any party herein and for good cause shown, the Court may modify the terms of this Protective Order.

14. After termination of this litigation, the provisions of this Protective Order shall continue to be binding. This Court retains and shall have jurisdiction over the parties and recipients of the Confidential Documents for enforcement of the provisions of this Protective Order following termination of this litigation.

By: NEVILLE PETERSON LLP
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*Counsel for Plaintiff, Best Key Textiles Co. Ltd.*

JOHN M. PETERSON

MARIA E. CELIS

RICHARD F. O'NEILL

Dated: November 4, 2013
New York, New York

Protective Order in Court No. 13-00367

Dated: November 4, 2013

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Attorneys for Defendant

So Ordered:

Dated: November 6, 2013
New York, New York

/S/ R. Kenton Musgrave
Senior Judge

**UNITED STATES COURT OF INTERNATIONAL TRADE**

**BEFORE: HON. R. KENTON MUSGRAVE, SENIOR JUDGE**

| | |
|---|---|
| **BEST KEY TEXTILES CO. LTD.,**<br><br>**Plaintiff,**<br><br>**v.**<br><br>**UNITED STATES,**<br><br>**Defendant.** | **Court No. 13-00367** |

**AGREEMENT TO BE BOUND BY PROTECTIVE ORDER**

The undersigned, _______________, who is a person to whom a party in this case proposes to disclose confidential information to assist in the preparation and presentation of its case, acknowledges that he or she has received a copy of the Protective Order entered in this action, has read the Protective Order, and agrees to be bound by all of its provisions, and agrees to submit to the jurisdiction of the United States Court of International Trade solely with regard to compliance with this Protective Order.

_______________________

Dated:

# UNITED STATES COURT OF INTERNATIONAL TRADE

| | |
|---|---|
| BEST KEY TEXTILES CO. LTD., Plaintiff, | |
| v. | Before: R. Kenton Musgrave, Senior Judge<br>Court No. 13-00367 |
| UNITED STATES, Defendant, | |

## AMENDED JUDGMENT

The court having entered a judgment of dismissal of this action pursuant to slip opinion 13-148 (Dec. 13, 2013), and the plaintiff having filed a motion for reconsideration of that judgment and opinion, and the court, after due deliberation, having considered and rendered a decision on the motion herein; Now therefore, in conformity with said decision, it is

ORDERED that the plaintiff's motion for reconsideration be, and hereby is, granted, and it is further

ORDERED that the prior judgment on this matter, and that portion of the prior opinion that pertains to jurisdiction claimed under 28 U.S.C. §1581(i)(4), both be, and hereby are, vacated, and it is further

ORDERED that the defendant's motion to dismiss, as converted in accordance with said decision into a motion for judgment pursuant to USCIT Rule 56.1, be, and hereby is, granted; and it is further

ORDERED, ADJUDGED and DECREED that judgment be, and hereby is, entered in favor of the defendant, and it is further

ORDERED, ADJUDGED and DECREED that this action be, and hereby is, dismissed anew.

/s/ R. Kenton Musgrave
R. Kenton Musgrave, Senior Judge

Dated: February 25 2014
New York, New York

Slip Op. 14 -22

# UNITED STATES COURT OF INTERNATIONAL TRADE

| | |
|---|---|
| BEST KEY TEXTILES CO. LTD., Plaintiff, v. UNITED STATES, Defendant. | Before: R. Kenton Musgrave, Senior Judge<br>Court No. 13-00367 |

## OPINION

[Granting motion for reconsideration and dismissing complaint.]

Decided: February 25, 2014

*John M. Peterson*, *Maria E. Celis*, *Richard F. O'Neill*, *George W. Thompson*, and *Russell A. Semmel*, Neville Peterson LLP of New York, NY, for the plaintiff.

*Marcella Powell* and *Beverly A. Farrell*, Trial Attorneys, Commercial Litigation Branch, Civil Division, U.S. Department of Justice, of New York, NY, for the defendant. With them on the brief were *Stuart F. Delery*, Assistant Attorney General, *Jeanne E. Davidson*, Director, and *Amy M. Rubin*, Acting Assistant Director, International Trade Field Office. Of counsel on the briefs were *Claudia Burke* and *Tara K. Hogan*, U.S. Department of Justice, and *Paula S. Smith*, Attorney, Office of the Assistant Chief Counsel, International Trade Litigation, U.S. Customs and Border Protection.

Musgrave, Senior Judge: Considering the plaintiff's motion for reconsideration of that part of the prior opinion on this matter (familiarity with which is here presumed) that addresses jurisdiction under 28 U.S.C. §1581(i)(4), *see* Slip Op. 13-148 (Dec. 13, 2013), as well as the plaintiff's alternative motion for transfer to the U.S. District Court for the District of Columbia pursuant to 28 U.S.C. §1631, the court concludes that quality of the briefing obviates the plaintiff's

motion for oral argument thereon. Opposition from the defendant U.S. Customs and Border Protection ("Customs" or "CBP") contends that the prior decision is correct on the plaintiff's lack of prudential standing to raise the claims it attempts to advance here. The court agrees it is "highly questionable" whether a Customs' ruling that lowers the rate of duty on a product the plaintiff has no expressed intention of importing can result in aggrievement or adverse effect to the plaintiff,[1] either directly or under a "zone of interests" analysis, as intended under the Administrative Procedure Act ("APA"). *See* 5 U.S.C. §702; *Clarke v. Securities Industry Ass'n*, 479 U.S. 388, 395 (1987) ("it was [never] thought . . . that Congress, in enacting § 702, had . . . intended to allow suit by every person suffering injury in fact"). While the court stands by its prior ruling in general, it is, nonetheless, the plaintiff's product that is the subject of the ruling at issue, and the court has undoubted exclusive jurisdiction over the general administration and enforcement of this type of matter in 28 U.S.C. §1581(i)(4). The court will therefore presume Customs' ruling "reviewable," *see Clarke*, 479 U.S. at 399, and the complaint's allegation of "aggrievement" sufficient to invoke jurisdiction under section 1581(i)(4). *See* 5 U.S.C. §702; 28 U.S.C. §2640(e); *see also id.* The prior judgment and that portion of the opinion addressing jurisdiction under section 1581(i)(4) are therefore vacated and hereby replaced, and the motions for transfer and oral argument are denied as moot. This opinion addresses the merits of the plaintiff's complaint.

I. *Background; Standard of Review*

By way of brief background, Customs conducted a revocation ruling proceeding in accordance with 19 U.S.C. § 1625(c). The proceeding resulted in issuance of Headquarters Ruling

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[1] The court remains unaware of any other suit brought against the government on the claim that the plaintiff or its property should be assessed a higher rate of tax or duty.

Letter HQ H202560, dated September 17, 2013 ("Revocation Ruling" or "RR"), which revoked New York Ruling Letter ("NY") N187601 (Oct. 25, 2011) ("Yarn Ruling"). The Yarn Ruling had classified the plaintiff's proprietary "BKMY" yarn under heading 5605, Harmonized Tariff Schedule of the United States ("HTSUS"), as "metalized" yarn dutiable at 13.2% *ad valorum*. The Revocation Ruling's replacement of the Yarn Ruling holds that BKMY is not a metalized yarn of heading 5605 but a polyester yarn dutiable at 8% *ad valorum*.

The issue before Customs, during the formal notice-and-comment revocation proceeding and the less formal Yarn Ruling request, was the proper statutory classification of the imported yarn for customs duty purposes. This inquiry required (1) ascertaining the proper meaning of specific terms in relevant tariff provisions, which is a question of law; and (2) determining whether the article comes within the description of such terms as properly construed, which is a question of fact. *See, e.g.*, *Park B. Smith, Ltd. v. United States*, 347 F.3d 922 (Fed. Cir. 2003). These questions implicate the proper standard of judicial review on the matter as it now stands.

On an ordinary *sui generis* classification question, by trial before the court, Customs is entitled to a presumption of correctness on its findings of fact, and review of its interpretation of relevant statutes is *de novo*. 28 U.S.C. § 2639(a)(1); *see, e.g.*, *Jarvis Clark Co. v. United States*, 733 F.2d 873 (1984). The plaintiff argues that even though this case involves a pre-importation ruling, it is the court's obligation to find the "correct decision" to its product's classification pursuant to *Jarvis Clark*,[2] which it avers "does not involve or change the standard of review, but is merely a

[2] *Jarvis Clark* involved an appeal on a protest of a classification, pursuant to which the importer had traditionally borne a so-called dual burden that "apparently arose out of the formalities of pleading: an importer could prevail in a protest only if it pleaded the proper alternative (continued...)

matter of procedure and remedy." Pl's Reply at 11. The court always endeavors to reach the "correct decision" -- even apart from *Jarvis Clark* -- but be that as it may, this is not an "ordinary" classification case. It is, of course, a review of an administrative record involving the administrative interpretation of the tariff statutes and the facts as they have been mustered before the agency. Such a proceeding is clearly governed by the scope and standard of judicial review of the Administrative Procedure Act ("APA") applicable to the court's residual jurisdiction rather than the evidentiary burdens of proof allocated in 28 U.S.C. §2639. *See* 5 U.S.C. § 706; 28 U.S.C. § 2640(e); *Shakeproof Indus. Prods. Div. of Ill. Tool Works v. United States*, 104 F.3d 1309, 1313 (Fed. Cir. 1997).

Section 706 of the APA provides in relevant part that "[t]o the extent necessary to decision and when presented, the reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, . . ." and "hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. §706.[3] An agency rule would "normally" be arbitrary and capricious "if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs

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[2] (...continued)
classification, and the importer carried the burden of proving the facts pleaded." 733 F.2d at 876. The resolution involved the interpretation of 28 U.S.C. §2643(b), which provides that if the court "is unable to determine the correct decision on the basis of the evidence presented in any civil action, the court may order a retrial or rehearing for all purposes, or may order such further administrative or adjudicative procedures as the court considers necessary to enable it to reach the correct decision."

[3] Thus, to the extent *Jarvis Clark* has any applicability here, "the basis of the evidence presented in [this] civil action", 28 U.S.C. §2643(b), can only be construed as being on the basis of the administrative record, and the "correct decision" is whether Customs' ruling thereon is arbitrary, capricious, an abuse of discretion, or not in accordance with law.

counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *Motor Vehicle Mfrs. Ass'n. v. State Farm Mut.*, 463 U.S. 29, 43 (1983). In such a review, factual assertions in pleadings and briefs that are not a part of the administrative record must be ignored by the court. *See, e.g., Jinan Yipin Corp., Ltd. v. United States*, 35 CIT ___, 800 F. Supp. 2d 1226, 1264 n.48 (2011).

The "arbitrary and capricious" standard of review is "highly deferential," as the parties agree. Def's Resp. at 17, Pl's Reply at 9. *See, e.g., Boltex Mfg. Co. v. United States*, 24 CIT 972, 978, 140 F. Supp. 2d 1339, 1346 (2000) ("[i]t is well-settled that the arbitrary and capricious standard of review is not merely deferential to agency action, but the *most* deferential of the APA standards of review") (italics in original), referencing *In re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000). Pursuant to this standard, the court must (1) consider whether the agency's decision was based on a consideration of relevant factors and whether there has been a clear error of judgment, and (2) analyze whether a rational connection exists between the agency's fact findings and its ultimate action. *See Consolidated Fibers, Inc., v. United States*, 32 CIT 24, 33-36, 535 F. Supp. 2d 1345, 1353-54 (2008) (comparing *Consolidated Bearings Co. v. United States*, 412 F.3d 1266, 1269 (Fed. Cir. 2005) with *In re Gartside*, 203 F.3d at 1312-13); *see also* 3 Charles H. Koch, Jr., *Administrative Law and Practice* §§ 10.1[1], 10.3, 10.4, 10.6 (2d ed. 1997 & Supp. 2006).

As above indicated, Customs' revocation rulings are conducted through formal notice and comment procedure. They therefore would appear to be not simply "interpretations contained in policy statements, agency manuals, and enforcement guidelines"[4] beyond the "pale" of the

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[4] *United States v. Mead Corp.*, 533 U.S. 218, 234 (2001), quoting *Christensen v. Harris County*, 529 U.S. 576, 587 (2000).

*Chevron* deference generally accorded to agency interpretations of statutes the agency is charged with administering. *Cf. Chevron, U.S.A., Inc. v. Natural Res. Def. Council*, 467 U.S. 837 (1984) *with Cathedral Candle Co. v. U.S. Intern. Trade Comm'n*, 400 F.3d 1352, 1361 (Fed. Cir. 2005) ("[n]ormally, courts accord *Chevron* deference when Congress has authorized the administrative agency 'to engage in the process of rulemaking or adjudication that produces regulations or rulings for which deference is claimed'"), quoting *Mead*, 533 U.S. at 229; *see also* 5 U.S.C. §§ 551(4)&(5) (defining "rulemaking" as the "agency process for formulating, amending, or repealing a rule," and a rule is defined as "an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy").

However, the court remains mindful of *Heartland By-Products, Inc. v. United States*, 264 F.3d 1126 (Fed. Cir. 2001), which essentially declared that revocation rulings are in the same class of Customs' "rulings" that are to be afforded the so-called "deference" of *Skidmore v. Swift & Co.*, 323 U.S. 134 (1944). 264 F.3d at 1135. *See Mead*, 533 U.S. at 228, 235; *see, e.g.*, *Warner-Lambert Co. v. United States*, 425 F.3d 1381, 1384 (2005); *Rocknel Fastener, Inc. v. United States*, 267 F.3d 1354, 1357 (2001). *Skidmore* requires "respect" for the thoroughness evident in the administrative ruling, for the validity of the reasoning that led to the ruling, for the evident consistency of the ruling with earlier and later pronouncements, for the formality with which the particular ruling was established, and for other factors that supply a "power to persuade, if lacking the power to control." *Skidmore*, 323 U.S. at 140; *see Mead*, 533 U.S. at 235; *see, e.g.*, *Warner-Lambert Co. v. United States*, 407 F.3d 1207, 1209 (Fed. Cir. 2005). In other words, *Skidmore* provides a neat restatement of the obvious, *i.e.*, the proper consideration that is, or should be, attempted as a matter of course on judicial review of *any* administrative proceeding.

II. *Summary of Revocation Ruling*

As described in the previous opinion, the Yarn Ruling and the Revocation Ruling address the classification of the plaintiff's BKMY yarn product. BKMY is produced from polyester chips melted into a slurry to which aluminum or zinc powder and titanium dioxide (a delusterant) is added. The slurry is then "fired' through a spinneret to create the yarn.

The Yarn Ruling that was revoked allowed BKMY classifiable as a "metalized yarn" of subheading 5605.00.90, HTSUS (2011):

> Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal:
> Other . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 13.2%

The referenced headings, 5404 and 5405, HTSUS, cover "synthetic" and "artificial" (respectively) "monofilament of 67 decitex or more and of which no cross-sectional dimension exceeds 1 mm; strip and the like (for example, artificial straw) of synthetic textile materials of an apparent width not exceeding 5 mm". Decitex refers to the articles' linear mass density, or fineness.

The Revocation Ruling concluded that the Yarn Ruling was issued erroneously and that BKMY is classifiable under a lower duty rate in subheading 5402.47.90, HTSUS (2011):

> Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex:
> Other, of polysters:
> Other . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 8%

Customs began its analysis in the revocation proceeding by setting forth the standard legal construct for customs classification, to wit: Merchandise is classifiable under the HTSUS in accordance with the General Rules of Interpretation ("GRIs"). GRI 1 provides that classification shall be determined according to the terms of the headings and any relative section or chapter notes

and, provided such headings or notes do not otherwise require, according to the remaining GRIs 2 through 6. GRI 6, HTSUS, requires that the GRI's be applied at the subheading level on the understanding that only subheadings at the same level are comparable. The GRIs apply in the same manner when comparing subheadings within a heading. RR at 2.

After summarizing the relevant HTSUS provisions at issue, Customs quoted the relevant Harmonized Commodity Description and Coding System Explanatory Notes ("EN") to heading 5605, HTSUS. Customs noted that the ENs are neither legally binding nor dispositive, but constitute "official interpretation of the Harmonized System at the international level" as "commentary on the scope of each heading of the HTSUS and . . . are generally indicative of the proper interpretation of these headings." *Id.* at 3 (citation omitted). The EN to heading 5605, HTSUS, is as follows:

> This heading covers:
>
> (1) **Yarn consisting of any textile material (including monofilament, strip and the like and paper yarn) combined with metal thread or strip**, whether obtained by a process of twisting, cabling or by gimping, whatever the proportion of the metal present. The gimped yarns are obtained by wrapping metal thread or strip spirally round the textile core which does not twist with the metal. Precious metals or plated metals are frequently used.
>
> (2) **Yarn of any textile material (including monofilament, strip and the like, and paper yarn) covered with metal by any other process.** This category includes yarn covered with metal by electro-deposition, or by giving it a coating of adhesive (e.g., gelatin) and then sprinkling it with metal powder (e.g., aluminium or bronze).
>
> The heading also covers products consisting of a core of metal foil (generally of aluminium), or of a core of plastic film coated with metal dust, sandwiched by means of an adhesive between two layers of plastic film.
>
> The heading covers multiple (folded) or cabled yarn containing plies of the yarn referred to above (e.g., fancy cords as used by confectioners, obtained by twisting together two or more metallised yarns as described above). It further includes certain

> other forms of yarn made in the same way and used for similar purposes, consisting of two or more parallel metallised yarns held together with a binding of metal thread or strip, and yarn or bundles of yarn gimped with yarn of this heading.
>
> Metallised yarn may be gimped. It is used in the manufacture of trimmings and lace and of certain fabrics, as fancy cords, etc.
>
> The heading **does not include**:
> (a) Yarn composed of a mixture of textile materials and metal fibres conferring on them an antistatic effect (**Chapters 50 to 55**, as the case may be).
> (b) Yarn reinforced with metal thread (**heading 56.07**).
> (c) Cords, galloons or other articles having the character of ornamental trimmings (**heading 58.08**).
> (d) Wire or strip of gold, silver, copper, aluminium or other metals (**Sections XIV and XV**).

*Id.* at 3-4 (as quoted in RR).

Based on the foregoing, when considering the plaintiff's argument that BKMY satisfies the terms of heading 5605 notwithstanding the "extremely minute amount of metal" and lack of description of the plaintiff's process of manufacture in the ENs, Customs agreed "that it is the nature of the product rather than the process of manufacture which is the key consideration in determining whether the product is classifiable in heading 5605." *Id.* at 4. After restating the definition of "metalized yarn" in heading 5605 ("being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal"), Customs concluded that BKMY did not meet that definition as it was not "combined" with metal. Customs also considered "[w]hether a polyester slurry falls within the meaning of 'or the like'" and concluded that "is unclear from the legal text alone." Customs then looked to the ENs for heading 5605 for "guidance". Customs found that those ENs

> clearly contemplate that not every product combining yarn and metal in some fashion will be considered a metalized yarn for tariff purposes. The ENs specifically describe two types of products covered by heading 5605, HTSUS: 1) Yarn consisting of any

> textile material (including monofilament, strip and the like and paper yarn) combined with metal thread or strip, and 2) Yarn of any textile material (including monofilament, strip and the like, and paper yarn) covered with metal by any other process. The ENs further emphasize that metalized yarn of heading 5605 is used for decorative purposes, for example "in the manufacture of trimmings and lace and of certain fabrics, as fancy cords, *etc.*". The ENs specifically exclude yarns composed of a mixture of textile materials and metal fibres [*sic*], and yarns reinforced with metal thread from classification in heading 5605, HTSUS. Thus, while heading 5605 may allow for new methods of production of metalized yarn, the mere presence of metal in the yarn does not automatically result in classification in heading 5605, HTSUS.

*Id.*

Customs concluded the description of "metalized yarn" in the ENs to heading 5605 was "also consistent with the common and commercial meaning of the term." *Id.* at 5. Examining dictionaries and other lexicographic materials to determine the common meaning of the term as well as consulting with industry sources, Customs confirmed that the extent of the commercial meaning of "metalized yarn" does not encompass every possible form of yarn with metal added but has a specific meaning consistent with the ENs to heading 5605 "which does not encompass the Best Key yarns at issue." *Id.* Commerce found that the common and commercial meanings of the term "indicate that 'metalized yarn' is commonly understood to mean either a pre-existing yarn consisting of any textile material combined with metal, or a plastic film deposited with metal and slit into yarn, generally used for decorative purposes." *Id.* Customs noted that the Federal Trade Commission definition of "metallic" is consistent with its conclusion, *see* 16 C.F.R. §303.7(o) ("A manufactured fiber composed of metal, plastic-coated metal, metal coated plastic, or a core completely covered by metal") and it found no "similar products" described as metalized yarns among the "numerous technical sources on metallic yarns and fibers" it consulted. *Id.* at 5-6. Rather, these "technical

sources on metalized yarn noted that metallic yarns consist of pre-existing yarn or plastic film bonded to metal", and they also "stress that they are used primarily for decorative purposes." *Id.*

"Similarly," Customs reasoned,

> textile industry experts consulted by CBP from the American Fiber Manufacturers Association [AFMA] and the National Council of Textile Organizations [NCTO] were in agreement that the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn. This is consistent with what CBP has classified in heading 5605 in the past, and consistent with the Explanatory Notes to heading 5605, HTSUS. Thus, we conclude that the term "metalized yarn" as commonly and commercially understood, is a manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal, including metal sandwiched between layers of plastic, as in Lurex yarns, having a visible metallic effect or appearance.

*Id.* at 6.

Customs then responded to the plaintiff's comments submitted in opposition to the proposed revocation. Addressing the affidavit opinion of Ingrid Johnson, the plaintiff's authority on textiles who had opined that BKMY is a "metalized yarn" according to a then-forthcoming definition of metallic yarn in the latest edition of a *Fairchild* dictionary,[5] Customs noted that the *Fairchild* definition "is completely consistent with" the definitions of the technical sources Customs had summarized and "does not reference any method of production similar to that used by Best Key". *Id.* at 7. Customs further noted that "[a]lthough this definition allows for the possibility of other combinations of textile and metal, not specifically mentioned, being a metallic yarn, it does not state that any textile yarn containing metal must automatically be considered a metallic yarn" as argued by the plaintiff. Customs thus reasoned that regardless of whether the *Fairchild* definition

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[5] *See* Phyllis G. Tortora and Ingrid Johnson, *The Fairchild Books Dictionary of Textiles*, p. 383 (Bloomsbury, 8th ed., 2013). The Revocation Ruling refers to this as "Fairchild's Dictionary of Fashion."

is intended to include such products or not, the definition does not support the argument that BKMY should be considered metalized yarns for customs duty purposes, as

> [s]uch an interpretation would be far more expansive than the plain text of the heading, the ENs[,] or the technical definitions would support. Indeed, it is difficult to imagine what woudn't fall within the scope of metalized yarn based on such a reading.

*Id.* (noting antistatic yarns, and yarns reinforced with metal thread, as examples of articles coming within the *Fairchild* definition but which are specifically excluded from heading 5605 pursuant to its ENs). Customs did not find the "Angelina" fibers analogous because they "have a distinctive and notable metallic, luminescent sheen." *Id.*

Customs then considered the more expansive claim, beyond visibility, to wit, that "in a metalized yarn, the metal is added for a specific purpose, to add desirable characteristics to a fabric such as . . . antimicrobial properties, or UV protection" as claimed by the plaintiff. *Id.* at 7-8. Customs rejected the argument in this instance for four reasons. First, Customs found that the plaintiff had provided no evidence to prove that the BKMY, for which the original Yarn Ruling letter had been sought, in fact held the "desired characteristics" claimed of its metals, namely "that the aluminum or zinc added to the instant yarns impart any microbial properties of UV protection to the fiber, or even that they could have such an effect in such low concentrations." *Id.* at 8. Second, Customs found that adding metal before extrusion "is not itself a new procedure" and that "[h]eretofore, such products have not been considered metalized yarns." *Id.* (references omitted). Third, Customs found that the various Customs rulings the plaintiff claimed as classifying yarns having no metallic appearance in heading 5605 in fact are all described as "decorative" or "metallic" or are used in decorative applications such as decorating packages. *Id.* Fourth, Customs noted that

while it "does not impose a strict requirement with respect to the amount of metal that must be present in order for a yarn to be considered metalized, tests conducted by the [Customs] Laboratory indicate that the samples of Best Key's yarns submitted for analysis contain only trace amounts of metal." *Id.* at 9. In sum,

> [g]iven that many products and preparations used in textiles, such as those of heading 3809[ ], contain metallic substances, and even natural fibers may naturally contain trace amounts of metal absorbed from the soil, many yarns may consequently have traces of metal simply as a result of common treatments such as dye fixing or delustring. To classify any fiber with as little metal as is present in the instant yarn in heading 5605 would expand the heading far beyond its current scope, to include any yarns which contain trace amounts of metal as a byproduct of common textile treatments and which have never been considered metalized yarn. As noted above, by contrast, the products recognized as metalized yarns in the textile industry have much higher concentrations of metal, with the result that the metal is immediately apparent.

*Id.* (footnote omitted).

III. *Discussion*

As indicated above, heading 5605 addresses the imported state of textile yarn, or strip or the like of heading 5404 or 5405, combined with metal. The obvious question Customs had to address was whether the product contemplated for importation is a textile-yarn-metal combination in the sense contemplated by heading 5605.

Both parties acknowledge the axiom that it is a product's "nature" upon importation that controls its classification. They also agree it is not the process of manufacture that is "key" in determining whether a yarn is properly entered as "metalized yarn." Where they differ is not only over Customs' legal interpretation of the language of heading 5605 but also Customs' factual findings and conclusions in the Revocation Ruling. On review of an administrative record, of

course, the court is precluded from substituting judgment on facts with "two fairly conflicting views" in the absence of showing that a finding is arbitrary, capricious or an abuse of discretion, *Universal Camera Corp. v. NRLB*, 340 U.S. 474, 488 (1951), but the plaintiff argues that the language of heading 5605 is "clear," and that since the heading is *eo nomine*, it covers "all forms" of the article including BKMY. *See Carl Zeiss, Inc. v. United States*, 195 F.3d 1375, 1379 (Fed. Cir. 1999).

The government is correct, however, that an *eo nomine* provision does not cover all forms when such coverage is contrary to legislative intent or when the articles are limited by the terms of the statute. In such a case, the provision only includes those articles embraced by the provision's language. Def's Resp. at 20, referencing *United States v. Charles R. Allen, Inc.*, 37 CCPA 110, C.A.D. 428 (1950); *RMS Electronics, Inc. v. United States*, 83 Cust. Ct. 37, 43, 480 F. Supp. 302, 306 (1979). Further, although the "clarity" of heading 5605 literally covers all forms of yarn-and-metal combinations, Customs implicitly found that the language cannot be interpreted literally, because it was not, in fact, intended to cover all forms, as evident in heading 5605's ENs' specific exclusion of four classes of articles from coverage (*e.g.*, antistatic yarns). *See* RR at 4. Customs' research and consultation with industry sources also confirmed that the commercial meaning of "metalized yarn" does not encompass every possible form of yarn with metal added. *Id.* at 5. Customs' conclusion that heading 5605 does not in fact cover "all forms" of yarn-and-metal combinations is persuasive, and the plaintiff's arguments to the contrary are not.

The plaintiff also disagrees with the Revocation Ruling's holding (assuming that is what it amounts to) that heading 5605 requires the combination of two distinct intermediary products, namely (i) a pre-existing yarn or strip "or the like" of heading 5404 or 5405, and (ii) metal

in the form specified in heading 5605. However, the plaintiff does not persuade that Customs' interpretation is unlawful or should be regarded as unpersuasive. As employed in heading 5605, "being textile yarn" *etc.* "combined with metal" obviously alludes to the state (*i.e.*, as imported) of "being" a metalized yarn intended to be encompassed by heading 5605 (*i.e.*, of unity or coalescence), but it may also encompass the process by which such a yarn is brought into "being" (*i.e.*, the result of which two or more substances are joined to make a single substance). Since either interpretation is possible, the statute is ambiguous to that extent. *See, e.g.*, *Rifkin Textiles Corp. v. United States*, 62 Cust. Ct. 316, 297 F. Supp. 1127, 1134 (1969) (the court "find[s] the term 'ornamented fabrics' to be ambiguous, taking that word in the sense that the court is not entirely certain of the meaning of the statutory language when applied to the particular facts of this case" and therefore "resort to pertinent authoritative materials to ascertain the meaning of the term is permissible"). The plaintiff opted for this route of administrative and judicial process, and it is not the court's function in this proceeding to resolve that ambiguity but only determine whether Customs' ruling has "power to persuade" in accordance with *Mead* and *Skidmore*. Customs emphasized on the record that it is the nature of the product upon importation that is determinative, *see* RR at 4, and contrary to the plaintiff's contention, the court is not persuaded that the process of "being . . . combined" is "irrelevant" to that determination and an erroneous interpretation of the statute.

The plaintiff further argues Customs "seeks to engraft" the exemplars of the ENs to heading 5605 "as limitations on the construction of heading 5605 itself", which type of "reasoning was explicitly rejected by the Federal Circuit in *Midwest of Cannon Falls, Inc. v. United States*, 122 F.3d 1423 (Fed. Cir. 1997)". Pl's Br. at 22. This appears to misinterpret Customs' analysis, *supra*,

and the *Cannon Falls* decision. Customs did not "engraft" from the ENs to heading 5605 but looked to them for guidance. The process of that interpretive guidance is in contrast with the *Cannon Falls* case, which involved Customs' reading into the HTSUS provision for "Christmas ornaments" the limitation "tree." The term was clearly not present in the relevant tariff provision. The "tipping point" for the Federal Circuit on the issue, however, was not Customs' interpretation of the ENs therefor, but the apparent fact that "tree" had been explicitly excluded by Congress upon supersedure of the prior tariff provision of the Tariff Schedules of the United States, in which the term "tree" had appeared. *See* 122 F.3d at 1429 ("The examples in the Explanatory Notes, however, cannot control here, *particularly in light of* the congressional omission of the word 'tree.'") (italics added).

Continuing, the plaintiff makes the parallel argument that a tariff provision will encompass a future-developed version of a product if the product bears an "essential resemblance" to the goods (or, where applicable, exemplars) identified in the tariff heading. Pl's Br. at 27-28, referencing *Brookside Veneers, Ltd. v. United States*, 847 F.2d 786, 789 (Fed. Cir. 1988). The government's position is that "because the language of heading 5605, HTSUS, makes clear that Congress intended that the statute be limited to only those products embraced by its language", the "essential resemblance" doctrine is inapplicable to the instant goods. Def.'s Resp. 26-27. The plaintiff contends the government is implying, in effect, that heading 5605 is an evolutionary "dead end" that cannot be stretched to embrace newly-developed products.

Here, the plaintiff overstates the government's position. Nowhere does Customs contend that a "newly developed product" would not be a product of heading 5605 "embraced by its language". The plaintiff asks why would the combination of metal powder with plastic in liquid

polymer form (*i.e.*, the plaintiff's process) "be something prohibited or unanticipated under the statute?", Pl's Reply at 17, but it is the "nature" of the product, not the newness of its "development" (or technical production process), that drives its classification. Customs simply found the plaintiff's product classifiable under a different heading (5402.47.90, HTSUS), and the plaintiff's rhetoric does not render Customs' Revocation Ruling unreasonable or unpersuasive.

The plaintiff next accuses Customs of "substantial *ex parte* communications between Customs and domestic industry lobbyist groups and competitors of Best Key for the purpose of soliciting their comments" which "is 'intolerable' and alone renders the proceedings arbitrary." Pl's Reply at 20, referencing *Home Box Office, Inc v. FCC*, 567 F.2d 9, 54 (D.C. Cir. 1977). *See also id.* at 24. However, there is no indication from the record that the individuals involved in the communications were with "competitors" of the plaintiff or "lobbyists" on the issue, let alone that this is an instance where domestic industry representatives "described the kind of . . . regulation that, in their view, [they] 'could live with.'" 567 F.2d at 53. Nor does the plaintiff persuade that there is a "possibility that there is here one administrative record for the public and this court and another for [Customs] and those 'in the know'". *Id.* at 54. *Cf.* Slip Op. 13-145, 37 CIT ___ (Dec. 4, 2013). It is plain from the record that during Customs' internal debate, prior to deciding whether the Yarn Ruling should be revoked or was correct, it simply reached out for help informing its own expertise. *See, e.g.,* Administrative Record Document ("AR") at 539-42. That is not unlawful.

Nonetheless, the plaintiff also takes issue with what it claims is the government's "conclusory" characterization of the plaintiff's "expert-opinion" affidavit on the record (which source avers that BKMY "bears an essential resemblance to metalized yarns known to commerce

and science") by attempting to disparage the level of expertise and opinions of the head of AFMA and the vice-president of NCTO. For example, the plaintiff claims the record "certainly" establishes that the opinion of the plaintiff's supporter "is much more reliable than the supposed 'industry experts' consulted by Customs." However, Customs appears to have adequately considered the opinion of the plaintiff's expert in its ruling construing the relevant statute. Customs' construction is not unlawful, and the court must defer to the agency's reasonable factual conclusion on whether the BKMY does or does not meet the statutory definition of "metalized yarn" as lawfully construed.

The plaintiff further contests the Revocation Ruling's statement that AFMA and NCTO "were in agreement that the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn" as a misrepresentation of the substance of Customs' communications with NCTO, and assignment to that group and others positions not reflected in the administrative record. If the plaintiff is correct on this latter point, it has not been prejudiced by Customs' arguably erroneous characterization. *See* 5 U.S.C. §706 (requiring "due account . . . of the rule of prejudicial error"). Whether it is an arguable "stretch" to characterize NCTO's communications with Customs, on behalf of itself and also in expressing the "view" of the head of AFMA, as those organizations' "agreement" with Customs' interpretation of heading 5605, those communications do, however, express the organizations' representatives' understanding of the question, and there is no indication on the record that those representatives or organizations held or would have held views significantly different than as stated by Customs. The court's role in this record does not involve re-weighing the evidence, choosing

between fairly competing alternatives, and substituting its own factual findings or judgment therefor. *Universal Camera Corp.*, *supra*.

The plaintiff also argues that the Revocation Ruling evinces a "lack of thoroughness" because Customs never "followed up" on information received from industry officials indicating that BKMY was in fact not a product unknown to the "metalized yarn industry." Pl's Reply at 22. Even if Customs was required to follow up on that line of thought, it is unclear what additional information, if any, would have necessitated a different or contrary analysis or interpretation of heading 5605. In any case, it is evident that Customs considered the addition of "chemicals [like metal] before extrusion", *see, e.g.*, AR at 541, in making its Revocation Ruling, as outlined above.[6]

On a different tack, the plaintiff contends the Revocation Ruling arbitrarily applies an "unstated and ambiguous" *de minimis* standard of metal content "for the purpose of" revoking the Yarn Ruling. Pl's Br. at 40-43, referencing *Del Monte Corp. v. United States*, 730 F.3d 1352 (Fed. Cir. 2013); Pl.'s Reply at 25-29. *Del Monte* involved "a *century* of tariff enforcement to the effect that 'in oil' signifies any amount of such substance" for purposes of classifying *fish* packed "in oil." 36 CIT ___, 885 F. Supp. 2d 1315, 1320 (2012) (italics added). That is not this case. Further, the plaintiff's argument relies on the false premise that Customs set a *de minimis* standard for heading 5605, which the record does not support, and which the plaintiff itself recognizes. *See* Pl's Br. at

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[6] The court merely notes in passing that the plaintiff ascribes nefarious and "disturbing" motives to Customs' internal discussion of "policy concerns" to argue that the Revocation Ruling is results-oriented. The argument fails. Nothing on the record indicates that Customs' discussions were results-oriented, and Customs' "policy" is precisely what 19 U.S.C. §1625 rulings are all about, at least in part. Customs' free and unfettered discussion thereof, internal or otherwise, albeit with notice and comment as circumstances may require, at any time is to be encouraged. *See, e.g.*, *International Custom Products, Inc. v. United States*, 32 CIT 302, 307, 549 F. Supp. 2d 1384, 1391 (2008).

40 (the Revocation Ruling "does not impose a strict requirement with respect to the amount of metal that must be present in order for a yarn to be considered metalized"), citing AR at 9. The absolute amount of a substance's presence does not determine the applicability of the *de minimis* rule, the intent of its introduction to serve a definite and useful purpose does, in which case the rule is inapplicable. *See, e.g., Canada Dry Ginger Ale, Inc. v. United States*, 43 Cust. Ct. 1, 8-9 (1959). In any event, Customs did not conclude during the revocation proceeding that the subject yarn was not a metalized yarn "due" to an insufficient amount of metal, Customs determined that the yarn did not qualify as a metalized yarn because it did not fall as a matter of fact within the scope of the statutory language of heading 5605 and within the meaning of the term "metalized yarn."

Continuing on this point, the plaintiff argues that the tariff definition of "metalized yarns" covers articles with any proportion of metal present, and it points to the ENs to heading 5605 for "support" because the ENs contain no language which requires a minimum threshold amount of metal in the yarn. All the same, it cannot be concluded that the Revocation Ruling was arbitrary or capricious in concluding that the mere presence of metal in yarn does not automatically result in classification in heading 5605.

In its motion for judgment, Pl's Br. at 41, the plaintiff cites to the Informed Compliance Publications (ICPs) "Classification: Apparel Terminology under the HTSUS" (June 2008) ("*ICP I*") and "Classification of Fibers and Yarns" (Sep. 2011) ("*ICP II*"), to support its contention that any presence of metals in textile yarn would qualify the product as a metalized yarn of heading 5605. These ICPs do not appear to be part of the administrative record before the court but are included (albeit improperly, the government contends) in full in the plaintiff's Appendix of

Documents. The plaintiff cited to the February 2009 version of the latter in its request for reconsideration (*see* AR 394 n.2), and it here argues that *ICP II* states that while the actual amount of metal present is typically quite small, "any of *these* yarns that have metal present, whatever the portion of metal present, is classified as a metalized yarn under heading 5605." *See ICP II* at 17 (italics added). But as the government points out, when examined in context this single phrase recited in the plaintiff's submission to Customs clearly speaks to "those" yarns that are included in subsection (1) of the ENs to heading 5605, *i.e.*, yarns combined with metal thread or strip, and/or refers to Note 2(B)(a) of Section XI, HTSUS.[7] The ICPs do not discuss the issue addressed in the Revocation Ruling, which is whether a product made by adding nanometals to polyester slurry results in a metalized yarn in the first instance.

Nonetheless, the plaintiff argues that prior rulings have "uniformly" and "correctly" stated that a yarn that contains any amount of metal is considered in its entirety as a metalized yarn for tariff purposes, and that Customs only considers whether the yarn contains any metal. Pl's Br.

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[7] The plaintiff also claims to take issue (Pl's Reply at 17-18), but in reality agrees, with the defendant's interpretation of Note 2 of Section XI, HTSUS :

> (A) Goods classifiable in chapters 50 to 55 or in heading 5809 or 5902 and of a mixture of two or more textile materials are to be classified as if consisting wholly of that one textile material which predominates by weight over each other single textile material. . . .
> (B) For the purposes of the above rule:
> (a) metalized yarn (heading 5605) [is] to be treated as a single textile material the weight of which is to be taken as the aggregate of the weights of its components; for the classification of woven fabrics, metal thread is to be regarded as a textile material.

In particular, the plaintiff proposes that a yarn composed of 90% polyester and 10% metal would be classified as a polyester yarn if the "10% metal" component is actually a "non-metalized" yarn, and note 2(A) applies, whereas note 2(B) applies if the product as a whole is a metalized yarn. But that still begs the question of whether BKMY is or is not classifiable as a "metalized yarn."

at 41. The plaintiff complains that Customs has arbitrarily "separated" its yarn from all other "metalized yarn" products in holding that its yarn alone is not metalized yarn. Contrary to such hyperbole, however, Customs did not act arbitrarily and capriciously in holding that the yarn was not "metalized" or in treating it differently from the products included in rulings cited by the plaintiff. As discussed in the Revocation Ruling, the rulings the plaintiff referenced are distinguishable from the plaintiff's yarn because they are rulings in which yarns were described as "decorative" or "metallic" or were used in decorative applications. *See* RR at 8, citing NY N062518, NY L82752, NY R00713, NY J84177, NY J82793 (revoked by HQ 967829), NY I80137, NY J84274, NY B89028, NY B89130, NY B89128, NY N062518 and NY R00713. None of the "decorative" or "metallic" yarn rulings involve a product created with the plaintiff's metal-in-the-slurry technique, which the plaintiff describes as a "new and unique nanometal process." The cited rulings are for statutory metalized yarns, primarily yarns plied with metallic strip. *See, e.g.*, NY J82790 ("decorative metallized yarn" comprised of polypropylene yarn mixed with metallic strip); NY L86561 (polyester yarn "in the form of metallic strips"); NY F83891 (aluminum-coated polyester strip); NY N034758 (metalized yarn comprised of acrylic and polyester coated with metal). These products clearly have metallic or metalized fibers or strip in them and were not produced through the addition of nanometals to a slurry. BKMY was not classified in the same manner as these products because it is not of the same nature.

Furthermore, it is incorrect to state that Customs has never considered any yarn containing metal to be anything other than "metalized" for tariff purposes. In HQ 952934 (July 19, 1993), Customs' Headquarters ruled on the classification of a fabric comprised of 45% cotton, 47%

polyester and 8% stainless steel. *See* AR at 511-516. The yarns from which the fabric was constructed were characterized by a core of polyester fibers mixed with micro fiber stainless steel surrounded by cotton fiber. The fabric was used to manufacture garments that provide protection from microwave radiation. Customs sought to determine whether the metal fiber incorporated in the fabric could be characterized as "metalized yarns" or "metal thread." Citing the ENs to heading 5605, HTSUS, Customs concluded that "[i]t is our position that the stainless steel fibers that are combined with the textile fibers to compose this fabric are not considered 'metalized yarns' classifiable in heading 5605." Customs found that the fabric did not consist of yarns combined with metal thread or strip, nor was it a yarn covered with metal by any process. Unlike the rulings cited by the plaintiff, which concern products that are decorative and/or that involve textile items comprised in part of metal fiber, this ruling may be more directly on point. Although the stainless steel was present in substantial quantities, the yarn was not "metalized" because it did not fit within the products described in the ENs, which is similar to Customs' holding in the Revocation Ruling.

For the purpose of addressing the plaintiff's arguments in the revocation proceeding, Customs assumed, but did not concede, that yarns "metalized" for a specific, practical, non-decorative purpose are within the scope of heading 5605. Customs then bolstered its ultimate conclusion that the Yarn Ruling should be revoked by noting that its laboratory analysis had found only a "trace" of metals in the plaintiff's yarn at a level apparently consistent with naturally occurring content or leftover intermediate processes (*e.g.* dye fixing or delustring).[8] Customs observed that "the actual amount of metal present is quite small in relation to the weight of the textile fibers" and

[8] The plaintiff argues that the metal introduced into the polyester slurry should not be considered "trace", but the plaintiff points to nothing in the record to the contrary.

it thus found that the record lacked evidence to support that the metals in the BKMY provided the specific, practical, non-decorative purposes claimed even assuming the hypothetical that heading 5605 encompasses non-decorative metal properties.

The plaintiff argues that analysis is legally irrelevant insofar there is no explicit "requirement" in heading 5605 that the metal of the metalized yarns thereof perform any specific function, and thus the plaintiff argues that it did not have to prove anything other than the fact that it intentionally added a quantum of metal to its polyester slurry in order to qualify the product as a metalized yarn of heading 5605. But again, the plaintiff's literal reading of heading 5605 cannot be the case. Even "whimsy" is motivated by desire -- all metal is sought (or introduced) for its specific, desired properties, *cf.*, *e.g.*, *Wacker Chemical Corp. v. United States*, 78 Cust. Ct. 113, 117 (1977); *E. Taranger, Inc. v. United States*, 51 Cust. Ct. 298, 300 (1963); *C.J. Tower & Sons v. United States*, 32 Cust. Ct. 339, 344 (1954); *C.J. Tower & Sons v. United States*, 26 Cust. Ct. 284, 290 (1951) -- and the plaintiff's claim to Customs, that it added nanometal particles in BKMY intentionally for specific properties (aluminum or zinc for ultraviolet protection, silver or copper for antimicrobial applications and the like),[9] belies the argument it would make here.

Customs' analysis of the hypothetical, of the claim that any amount of metal added to impart some desirable quality beyond visibility qualifies the product as a "metalized" yarn of heading 5605, clearly indicates that if the claimed quality is not obviously discernable, it must at least be measurable, which implies at least a minimum threshold or quantum of proof that the

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[9] Notwithstanding its assertions here on what was before Customs, at least for purposes of the Yarn Ruling it appears the plaintiff claimed that the antimicrobial properties of its BKYM (at the time) are imparted by titanium dioxide added to the polyester slurry, not silver.

imparted, desired quality is in fact imparted. *Cf. United States v. American Shipping Co.*, 15 U.S. Cust. App. 249, T.D. 42261 (1927) (the term "however small" added nothing to the specificity of paragraph 1430 of the Tariff Act of 1922). In the end, Customs reasoned that to classify in accordance with the logic of the plaintiff's argument any fiber "with as little metal as is present in the instant yarn in heading 5605 would expand the heading far beyond its current scope, to include any yarns which contain trace amounts of metal as a byproduct of common textile treatments, and which have never been considered metalized yarn."

This logic holds especially persuasive power. By the plaintiff's literal reasoning, even a barely measurable amount of metal -- a couple of atoms? -- "intentionally" introduced and dispersed into a slurry would suffice for a "metalized" yarn of heading 5605. That is, quite literally, *reductio ad absurdum*.

The plaintiff points to no statutory language in heading 5605 or otherwise that would indicate Congress intended that heading to apply to any product containing any amount of metal, no matter how minute, and regardless of its effect or purpose, and unlike *Dal Tile*, this statue is not "plain" regarding the amount of metal necessary to make a "metalized" yarn. *Cf. Dal-Tile Corp. v. United States*, 424 F.3d 1286, 1290 (Fed. Cir. 2005), referencing *Public Citizen v. United States Dep't of Justice*, 491 U.S. 440, 471 (1989) (Kennedy, J., concurring) (absurdity excepts "plain" meaning where it is "quite impossible" Congress intended the result). The court, thus, is not persuaded that "whatever the proportion of the metal present" (*see* ENs to heading 5605; *cf. ICP I & ICP II*), which is not a part of the language of heading 5605 itself, was written with an intent to

encompass the minute "proportion" to which nanoparticulate metal may theoretically be reduced and "intentionally" introduced into a product resulting from the likes of the plaintiff's process.

During the revocation proceeding, the plaintiff did not persuade Customs that heading 5605 actually encompasses any non-decorative properties of metal as well as decorative properties. No opinion here need be expressed on whether that is a correct reading of heading 5605, because in the final analysis the plaintiff failed to prove to Customs that even if heading 5605 does encompass non-decorative metal properties, the BKMY considered for purposes of the Yarn Ruling in fact exhibits the specific properties claimed to be provided by the "combined" metal. Custom's factual finding on this issue in the Revocation Ruling, and more broadly that the BKMY is not a metalized yarn of heading 5605, was therefore not arbitrary or capricious, and the court may not substitute judgment therefor.

The plaintiff has failed to persuade that the Revocation Ruling, as a whole, is arbitrary, capricious, an abuse of discretion, or not in accordance with law, and the court finds that the Revocation Ruling has the power to persuade, and also that the plaintiff's remaining arguments are without merit.

*Conclusion*

In view of the foregoing, the plaintiff's motion for judgment is denied. The defendant's USCIT Rule 12(b)(1) motion to dismiss is converted into a cross-motion for judgment pursuant to USCIT Rule 56.1. *See, e.g.*, *Carl v. U.S. Secretary of Agriculture*, 36 CIT ___, 839 F. Supp. 2d 1351 (2012). Upon consideration in accordance with the foregoing, that motion is granted, and the defendant's alternative motion for further discovery, and the plaintiff's motion for oral argument, are hereby dismissed as moot.

**So ordered.**

/s/ R. Kenton Musgrave
R. Kenton Musgrave, Senior Judge

Dated: February 25, 2014
New York, New York

Slip Op. 13 - 145

# UNITED STATES COURT OF INTERNATIONAL TRADE

BEST KEY TEXTILES CO., LTD.,

Plaintiff,

v.

UNITED STATES,

Defendant,

Before: R. Kenton Musgrave, Senior Judge
Court No. 13-00367

## OPINION

[Denying plaintiff's motion for unredacted versions of defendant's confidential third and final supplement to the administrative record.]

Dated: December 4, 2013

*John M. Peterson*, *Maria E. Celis*, *Richard F. O'Neill*, *George W. Thompson*, and *Russell A. Semmel*, Neville Peterson LLP of New York, NY, for the plaintiff.

*Amy M. Rubin*, Acting Assistant Director, Commercial Litigation Branch, U.S. Department of Justice, of New York, NY, for the defendant.

Musgrave, Senior Judge: The plaintiff, Best Key Textile, Inc., invoked the court's jurisdiction under 28 U.S.C. §1581(h), or alternatively 28 U.S.C. § 1581(i)(4), to seek pre-importation judicial review of U.S. Customs and Border Protection's ("Customs") Headquarters Ruling Letter HQ H202560, 47 Cust. Bull. & Dec. 41 (Sep. 17, 2013) ("Revocation Ruling") revoking New York Customs Ruling N187601 (Oct. 25, 2011) (the "Yarn Ruling"). Certain procedural background leading up to the filing of this matter is set forth in *Best Key Textiles, Inc. v. United States*, Slip Op. 13-135 (Nov. 4, 2013) (holding the Revocation Ruling, which becomes

effective 60 days after publication, deemed published October 17, 2013), familiarity with which is presumed. As in that case, this matter is attempting to adhere to an expedited litigation schedule. *See* ECF No. 23 (Nov. 6, 2013).

This opinion addresses only the plaintiff's motion to compel the defendant to provide the plaintiff with un-redacted versions of the defendant's confidential third and final supplement to the administrative record. *See* ECF No. 44 (motion for leave to file public version of final supplement to the administrative record); ECF No. 46 (granting motion for leave); ECF No. 49 (confidential version of final supplement). The precise motion was raised during the in-person emergency status conference convened yesterday, also upon motion therefor from the plaintiff.

At the conclusion of the conference, the court agreed to inspection and evaluation, *in camera*, of the un-redacted portions of the administrative record documents over which the defendant asserted privilege of attorney-client or pursuant to the inter-agency exemption of 5 U.S.C. §552(b)(5). The court has done so and also considered the law upon which the plaintiff claims entitlement. *See Brennan Center for Justice at New York University School of Law v. U.S. Department of Justice*, 697 F.3d 184 (2nd Cir. 2012); *Fund for Animals v. Williams*, 391 F. Supp. 2d 191 (D.D.C. 2005); *see also NLRB v. Sears, Roebuck & Co.*, 421 U.S. 132 (1975); *National Council of La Raza v. Department of Justice*, 411 F.3d 350 (2nd Cir. 2005); *Grand Central Partnership, Inc. v. Cuomo*, 166 F.3d 473 (2nd Cir. 1999); *Coastal States Gas Corp. v. Department of Energy*, 617 F.2d 854 (D.C. Cir. 1980); 81 *Am. Jur. 2d*, Witnesses §517; Charles Alan Wright, Kenneth W. Graham, Jr., Victor James Gold, Michael H. Graham, 26A *Fed. Prac. & Proc. Evid.*

§5680 (1st ed.). The court has also considered the plaintiff's brief filed in opposition to the defendant's claim of privilege.

The plaintiff argues that the government has "sought to designate" the contested redactions "as the basis of its decision to revoke *NY N187601*, and as the reasons why it will no doubt claim its revocation was not arbitrary, capricious or contrary to law." Pl's Br. in Opposition at 3. The plaintiff's argument rests on its reading of *Brennan*'s mention of "referencing a protected document as authoritative". *See* 697 F.3d at 205. However, the defendant has not "referenced" or mentioned any of the contested redacted content as "authoritative" publically, as yet; it has only filed as part of "the" administrative record non-redacted portions of certain documents.

The court's *in camera* inspection of the redacted portions complies with USCIT Rule 26(b)(5)(A)(ii), and it finds that all of the claimed redactions are predecisional and deliberative, and that none may fairly be characterized as "final" in the sense of having been adopted formally or informally within the contours of the Revocation Ruling or as having expressed the "working law" of Customs. *See Sears*, 421 U.S. at 153; *La Raza*, 411 F. 3d at 356-57. Some documents also express communications over which the attorney-client privilege attaches. *See, e.g., Upjohn Co. v. United States*, 449 U.S. 383, 389 (1981); *Elkem Metals Co. v. United States*, 24 CIT 1395, 126 F. Supp. 2d 567 (2000). Customs has not abused its discretion in redacting parts of the final supplement to the administrative record from public scrutiny.

The parties will proceed accordingly.

**So ordered.**

Dated: December 4, 2013
New York, New York

/s/ R. Kenton Musgrave
R. Kenton Musgrave, Senior Judge

# UNITED STATES COURT OF INTERNATIONAL TRADE

BEST KEY TEXTILES CO. LTD.,

Plaintiff,

v.

UNITED STATES,

Defendant,

Before: R. Kenton Musgrave, Senior Judge
Court No. 13-00367

## JUDGMENT

This action having been duly submitted for decision; and the court, after due deliberation, having rendered a decision herein; Now therefore, in conformity with said decision, it is

ORDERED that any outstanding motions on the docket be, and hereby are, deemed moot in accordance with the following decree, and it is further

ORDERED, ADJUDGED and DECREED that the defendants' motion to dismiss be, and hereby is, granted; and it is further

ORDERED, ADJUDGED and DECREED that this action be, and hereby is, dismissed.

/s/ R. Kenton Musgrave
R. Kenton Musgrave, Senior Judge

Dated: December 13, 2013
New York, New York

Slip Op. 13 - 148

# UNITED STATES COURT OF INTERNATIONAL TRADE

BEST KEY TEXTILES CO. LTD.,

Plaintiff,

v.

UNITED STATES,

Defendant,

Before: R. Kenton Musgrave, Senior Judge
Court No. 13-00367

**OPINION**

[Dismissing for lack of subject matter jurisdiction.]

Decided: December 13, 2013

*John M. Peterson*, *Maria E. Celis*, *Richard F. O'Neill*, *George W. Thompson*, and *Russell A. Semmel*, Neville Peterson LLP of New York, NY, for the plaintiff.

*Marcella Powell* and *Beverly A. Farrell*, Trial Attorneys, Commercial Litigation Branch, Civil Division, U.S. Department of Justice, of New York, NY, for the defendant. With them on the brief were *Stuart F. Delery*, Assistant Attorney General, *Jeanne E. Davidson*, Director, and *Amy M. Rubin*, Acting Assistant Director, International Trade Field Office. Of counsel on the brief were *Claudia Burke* and *Tara K. Hogan*, Department of Justice, and *Paula S. Smith*, Attorney, Office of the Assistant Chief Counsel, International Trade Litigation, United States Customs and Border Protection.

Musgrave, Senior Judge: The plaintiff, Best Key Textile, Inc., seeks pre-importation declaratory judgment that U.S. Customs and Border Protection's ("Customs") Headquarters Ruling Letter HQ H202560 dated Sep. 17, 2013 and published at 47 Cust. Bull. & Dec. 41 (Oct. 2, 2013) at 20 ("Revocation Ruling"), is arbitrary and capricious, an abuse of discretion, or not in accordance with law. *Cf.* Slip Op. 13-145 (Dec. 4, 2013). The Revocation Ruling revoked New York Customs

Ruling N187601 (Oct. 25, 2011), which had ruled the plaintiff's proprietary "BKMY"[1] yarn statutorily classifiable under heading 5605, Harmonized Tariff Schedule of the United States ("HTSUS"), as "metalized" yarn dutiable at 13.2% *ad valorem* (the "Yarn Ruling"). The Revocation Ruling concluded the yarn is "of polyesters" dutiable under heading 5402 at 8% *ad valorem*.[2] The plaintiff argues the Yarn Ruling provides the correct classification under heading 5605. For the following reasons, the court must conclude subject matter jurisdiction is lacking in this action.

*Discussion*

The plaintiff contends jurisdiction exists under 28 U.S.C. § 1581(h) or alternatively 28 U.S.C. § 1581(i)(4). The plaintiff explains that it sought and obtained the pre-importation Yarn Ruling in 2011 pursuant to 19 C.F.R. part 177 upon representing that it contemplated a "specifically described transaction". *See* 19 C.F.R. §177.1(a)(1).[3]

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[1] The plaintiff avers that "BKMY" is produced by mixing aluminum, zinc or other metal in nanopowdered form together with titanium dioxide (as delusterant) into a polyester slurry prior to extrusion of the yarn through a spinneret.

[2] Specifically, the Yarn Ruling had found the yarn classifiable under subheading 5605.00.90, HTSUS, which provides for "metalized yarn whether or not gimped, being textile yarn, combined with metal in the form of thread, strip or powder or covered with metal: Other . . . 13.2%", whereas the Revocation Ruling ruled the yarn classifiable under subheading 5402.47.90, HTSUS, which provides for "Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 47 decitex: Other, of polyesters: Other . . . 8%".

[3] *See also* §177.1(d)(3) ("[a] 'prospective' transaction is one that is contemplated or is currently being undertaken and has not resulted in any arrival or the filing of any entry or other document, or in any other act to bring the transaction, or any part of it, under the jurisdiction of any Customs Service office"); §177.2(b) (content of a ruling request shall include, if known, "the name of the port or place at which any article involved in the transaction will arrive or be entered . . . and a description of the transaction itself"); §177.5 ("[e]ach person submitting a request for a ruling in connection with a Customs transaction shall immediately advise Customs in writing of any change in the status of that transaction, as defined in §177.1(d)(3)"). As indicated by the foregoing, Customs (continued...)

The plaintiff also avers that in seeking to confirm the "duty rate benefits" of the Yarn Ruling, it made, or ordered made, a garment, the "Johnny Collar" shirt, comprised of BKMY, and it requested from Customs a ruling concerning the garment's classification. The plaintiff contended the garment was classifiable under subheading 6105.90.8030, which provides for "Men's or boys' shirts, knitted or crocheted: Other: Subject to man-made fiber restraints . . . 5.6%". In NY N196161 (Apr. 13, 2012), Customs initially ruled that the garment was classifiable as a polyester shirt under subheading 6110.30.3053, which provides for "Sweaters, pullovers, sweatshirts, waistcoats (vests) and similar articles, knitted or crocheted: of wool or fine animal hair: Of man-made fibers: Other: Other: Other: Other: Men's or boys': Other: . . . 32%". However, upon reconsideration, in HQ H226262, dated Sep. 16, 2013, Customs revoked this ruling as contrary to NY N187601, and ruled that the Johnny Collar shirt remained classifiable in subheading 6110.90.90, HTSUS, which provides for "Sweaters, pullovers, sweatshirts, waistcoats (vests) and similar articles, knitted or crocheted: Of other textile materials: Other . . . . 6%". 47 Cust. Bull. & Dec. 41 (Oct. 2, 2013) at 15. Be that as it may, the plaintiff does not explain how the Johnny Collar ruling or its revocation affects its "contemplated transaction" of an importation of its *yarn* into these United States, which is the essence of the 28 U.S.C. §1581(a) standing requirement referenced in 28 U.S.C. §2631(h).

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[3] (...continued)
contemplates for purposes of a pre-importation ruling that a "contemplated" transaction is one that is not merely hypothetical. *See* 19 C.F.R. § 177.7(a) ("no ruling letter will be issued with regard to transactions or questions which are essentially hypothetical in nature or in any instance in which it appears contrary to the sound administration of the Customs and related laws to do so"). There was, however, no representation in this proceeding that the yarn has been or would actually be imported.

I

An action brought for declaratory judgment under 19 U.S.C. §1581(h) may only be commenced "by the person who would have standing to bring a civil action under section 1581(a) of this title if he imported the goods involved and filed a protest which was denied, in whole or in part, under section 515 of the Tariff Act of 1930." 28 U.S.C. § 2631(h). The Court of Appeals for the Federal Circuit has explained the requirements for invoking jurisdiction under section 1581(h) as follows: (1) judicial review must be sought prior to importation of goods; (2) review must be sought of a ruling, a refusal to issue a ruling, or a refusal to change such ruling; (3) the ruling must relate to "certain subject matter"; and (4) it must be shown that irreparable harm will occur unless judicial review is obtained prior to importation. *Am. Air. Parcel Forwarding Co. v. United States*, 718 F.2d 1546, 1551-52 (Fed. Cir.1983), *cert. denied*, 466 U.S. 937 (1984). The plaintiff has the burden of demonstrating that jurisdiction exists by clear and convincing evidence. 28 U.S.C. § 2639(b). *See McNutt v. Gen. Motors Acceptance Corp.*, 298 U.S. 178, 189 (1936).

It is with that "certain subject matter" of condition (3), as well as the harm alleged with respect to condition (4), that this court must address, as the defendant has moved to dismiss for lack of subject matter jurisdiction. The plaintiff apparently satisfies conditions (1) and (2), but with regard to (3), the plaintiff conflates the Johnny Collar ruling with the Yarn Ruling when it avers, with respect to (4), that it suffered irreparable harm as a result of the Johnny Collar ruling by experiencing an immediate and negative impact upon its business, and it also avers, based on supporting affidavits, that when Customs proposed the Revocation Ruling for comment the situation created "additional uncertainty" among its customers and caused further irreparable harm via curtailment of contemplated orders for its BKMY yarn. *See, e.g.*, Complaint ¶¶ 5 & 6.

The plaintiff asserts it has standing as a party, which, if it imported "the goods involved" as a non-resident importer and filed a protest that was denied in whole or in part, would have standing to bring a civil action under 28 U.S.C. §1581(a) to challenge a denial of its protest. However, the plaintiff's customers for its yarn are foreign garment manufacturers. *See* Yu Aff. ¶ 11; Lee Aff. ¶ 3, Ex. A. The court fails to discern how the "contemplated transaction," of an importation of the plaintiff's *yarn* into the United States, has been harmed in any way by the Revocation Ruling.

The plaintiff contends that the Revocation Ruling, which resulted in a lower tariff for the yarn at issue in this action, has caused it harm because strangers to this action -- garment manufacturers -- may no longer purchase its yarn unless the garments they make from it can be imported under the "favorable" duty rate accorded to importations of garments made of "metalized" yarn by other strangers to this action -- garment importers. Hence, the defendant argues that the plaintiff seeks to litigate "on behalf of" potential importers of garments, who are not presently before this court and are remote from the core of this case. Thus, the defendant argues the plaintiff does not have standing here as a result of the Revocation Ruling. Def's Resp. & Mot. to Dismiss at 2. *Cf.* 19 C.F.R. § 177.7(a), *supra*. The plaintiff counters that 28 U.S.C. §2631(h) confers prudential standing to any person who, if he imported the subject merchandise at some point in the future and received a denied protest from Customs, could challenge Custom's decision here; such a person would have standing to protest an adverse liquidation and the question then becomes one of remedy. See Pl's Reply at 4. That may be true, but it presumes a decision adverse to a specific imported good. *See generally Heartland By-Products, Inc. v. United States*, 26 CIT 268, 272-81, 223 F. Supp. 2d 1317, 1323-31 (2002) (discussing the history behind and scope of §1581(h)).

Under the current *status quo* resulting from the Revocation Ruling, if the plaintiff were to import the yarn into these United States, the yarn would benefit from the lower duty rate resulting from the Revocation Ruling. It is therefore plain that the importance to the plaintiff here is not the U.S. duty rate on the yarn, but the duty rate on garments made of it. The plaintiff implies that an Article III "case or controversy" exists over the classification of the yarn, but the harm that it pleads is not the type of cognizable injury that relief pursuant to section 1581(h) was intended to address. The aggrieved litigants in the cases to which the plaintiff cites for support on its irreparable harm argument all had prudential standing to challenge specific, identifiable importations of merchandise directly impacted by a particular ruling,[4] but that is not the case here. The proper consideration here is the "harm" that flows from the Revocation Ruling to a *direct* importation of the yarn versus importation under the Yarn Ruling. As the plaintiff acknowledges, "[n]o Article III justiciable 'case or controversy' exists under section 1581(a) when prosecution of a protest will not result in a duty refund." Pl's Br. at 15, citing *Vanderhoof Specialty Wood Prods. v. United States*, 28 CIT 354, 355 (2004); *3V, Inc. v. United States*, 23 CIT 1047, 1049 (1999); *Acrilicos v. Regan*, 9 CIT 442, 446 (1985); *Carson M. Simon & Co. v. United States*, 55 Cust. Ct. 103, 108 (1965) (dismissing claims as to entries that were entered at a rate lower than the claimed rate). On the other hand, garment importers are, of course, free to import and challenge any classification of garments made of BKMY in accordance with *United States v. Stone & Downer Co.*, 274 U.S. 225 (1927).

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[4] *E.g.*, *Holford U.S.A. Ltd. v. United States*, 19 CIT 1486 (1995) (applicability of URAA grandfather clause to importer's textile contracts); *CPC Int'l, Inc. v. United States*, 19 CIT 978 (1995) (importer's pre-importation ruling as to country of origin marking); *Nat'l Juice Prods. Ass'n v. United States*, 10 CIT 48 (1986) (country-of-origin marking requirements' impact on juice product association's imports); *Manufacture de Machines du Haut-Rhin v. von Raab*, 6 CIT 60 (1983) (manufacture's challenge to exclusionary ruling affecting importation of its merchandise).

II

The plaintiff alternatively claims jurisdiction pursuant to the "administration and enforcement" provision of 28 U.S.C. §1581(i)(4). But typically, "if jurisdiction does not lie under § 1581(h), a plaintiff must import the merchandise in question, file a protest with Customs regarding the classification decision, and fully exhaust its administrative remedies." *Connor v. United States*, 24 CIT 195, 200 (2000). Section 1581(i) was not intended to create new causes of action or meant to supersede more specific jurisdictional provisions, *e.g., Asociacion Colombiana de Exportadores de Flores (Asocoflores) v. United States*, 13 CIT 584, 586, 717 F. Supp. 847, 849-50 (1989) (citations omitted), *aff'd*, 903 F.2d 1555 (Fed. Cir. 1990), and it is well-settled that "to prevent circumvention of the administrative processes crafted by Congress, jurisdiction under subsection 1581(i) may not be invoked if jurisdiction under another subsection of 1581 is or could have been available, unless the other subsection is shown to be manifestly inadequate." *Hartford Fire Ins. Co. v. United States*, 544 F.3d 1289, 1292 (Fed. Cir. 2008), citing *Int'l Custom Prods., Inc. v. United States*, 467 F.3d 1324, 1327 (Fed. Cir. 2006). In other words,

> "where a litigant has access to [the Court of International Trade] under traditional means, such as 28 U.S.C. § 1581(a), it must avail itself of this avenue of approach by complying with all the relevant prerequisites thereto. It cannot circumvent the prerequisites of 1581(a) by invoking jurisdiction under 1581(i)" unless such traditional means are manifestly inadequate.

*Hartford*, 544 F.3d at 1292, quoting *Am. Air. Parcel Forwarding Co., supra*, 718 F.2d at 1549. If "another remedy is or could have been available, the party asserting § 1581(i) jurisdiction has the burden to show how that remedy would be manifestly inadequate." *Miller & Co. v. United States*, 824 F.2d 961, 963 (Fed. Cir. 1987) (citations omitted), *cert. denied*, 484 U.S. 1041 (1988).

The plaintiff cannot argue that the "traditional approach" of section 1581(a) to the classification claims it would attempt to assert here under the guise of section 1581(h) provides a manifestly inadequate remedy. As indicated above, it has no standing to assert such claims. The plaintiff's actual injury complaint here is that garment makers will not buy its yarn because importers of those garments will not get a more favorable duty rate for items made of the plaintiff's yarn. But the duty rate charged to those importers is beyond any of the plaintiff's interests that the provisions of section 1581 are meant to protect. The essence of the argument the plaintiff attempts to put forth amounts to a request for the protection of others' interests, namely those of importers of garments manufactured by purchasers of the plaintiff's yarn. Even if the plaintiff is protecting its own financial interests by extension, it has no authority or standing to assert the claims of those remote parties under 1581(i) in its action here, as that statute to be strictly construed.

*Conclusion*

For these reasons, the court must conclude there is no Article III case or controversy over this matter as contemplated under 28 U.S.C. §1581(h), nor does jurisdiction alternatively lie in 28 U.S.C. §1581(i)(4). The court will therefore grant the defendant's motion to dismiss this action, which in turn will moot certain outstanding motions on the docket. Judgment will enter accordingly.

So ordered.

/s/ R. Kenton Musgrave
R. Kenton Musgrave, Senior Judge

Dated: December 13, 2013
New York, New York

HQ H202560

SEP 17 2013

CLA-2 OT:RR:CTF:TCM H202560 CkG

CATEGORY: Classification

TARIFF NO: 5402.47.90

Mr. John M. Peterson
Neville Peterson, LLP
17 State Street 19th Floor
New York, NY 10004

RE: Revocation of New York Ruling Letter N187601; yarn

Dear Mr. Peterson:

This is in reference to New York Ruling Letter N187601, issued to Ms. Margaret Polito on behalf of Best Key Textiles, Limited (Best Key), on October 25, 2011. We have reconsidered this ruling and find that the classification of the polyester filament yarn at issue as metalized yarn of heading 5605, Harmonized Tariff Schedule of the United States (HTSUS), was in error.

Pursuant to section 625(c)(1), Tariff Act of 1930 (19 U.S.C. §1625(c)(1)), as amended by section 623 of Title VI, notice proposing to revoke NY N187601 was published on April 24, 2013, in Volume 47, Number 18, of the Customs Bulletin. Two comments were received in opposition to this Notice. Responses to those comments relevant to the substantive classification issue are incorporated in the Law and Analysis section of this decision.

FACTS:

NY N187601 described the subject merchandise as follows:

> two spools of...polyester filament yarn, one of which you state is combined with aluminum powder and the other, zinc powder. Both, you state, contain titanium. You state that the aluminum or zinc powder is added to the slurry that is extruded to create the filaments.

You state that Best Key produces two products. The first is an 80 denier polyester yarn claimed to contain 1900 ppm of aluminum distributed evenly throughout the polyester matrix, with an unspecified amount of titanium dioxide also added as a delusterant. You state that the total presence of metal in the yarn (aluminum, titanium and zinc) accounts for about 0.7% of the total yarn weight. The second product is a 79.6 denier polyester yarn stated to contain 2800 ppm of zinc distributed evenly throughout the polyester matrix with an unspecified amount of titanium dioxide also added as a delusterant. The total presence of metal in the yarn (zinc, titanium and aluminum) is stated to account for about 0.74% of the total yarn weight. However, we note that the CBP Laboratory in New York tested several samples of entries of Best Key garments made from the instant yarns with different results. The highest level of metal present in the samples analyzed by the CBP Laboratory shows titanium in an amount of 1608 parts per million and aluminum in the amount of 741 ppm, for a total metal content of 0.002% (by volume). We also note that the garment tags and labels simply stated that the garments were made of "100% polyester" and made no mention of any metal content.

The production process of Best Key's polyester yarns is stated to begin with the drawing of polyester yarn. The extruded polyester yarn is broken up into chips and melted to produce a polyester slurry. At this point, aluminum or zinc in powder form is added to the slurry, and, as stated above, titanium dioxide is added as a delusterant. The polymer mixture is then forced through a spinneret, which yields yarns of the desired thickness. Due to the small amount of metal in the yarn, the presence of the metal is not discernible to the naked eye.

ISSUE:

Whether the subject yarns are classified in heading 5605, HTSUS, as metalized yarn, or heading 5402, HTSUS, as synthetic filament yarn.

LAW AND ANALYSIS:

Merchandise is classifiable under the HTSUS in accordance with the General Rules of Interpretation (GRIs). GRI 1 provides that classification shall be determined according to the terms of the headings and any relative section or chapter notes and, provided such headings or notes do not otherwise require, according to the remaining GRIs 2 through 6. GRI 6, HTSUS, requires that the GRI's be applied at the subheading level on the understanding that only subheadings at the same level are comparable. The GRI's apply in the same manner when comparing subheadings within a heading.

The HTSUS provisions under consideration are as follows:

5402: Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex:

5402.47: Other, of polyesters:

5402.47.90: Other. . .

* * * * *

5605: Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal:

5605.00.90: Other...

* * * * *

The Harmonized Commodity Description and Coding System Explanatory Notes ("EN") constitute the official interpretation of the Harmonized System at the international level. While neither legally binding nor dispositive, the ENs provide a commentary on the scope of each heading of the HTSUS and are generally indicative of the proper interpretation of these headings. See T.D. 89-80, 54 Fed. Reg. 35127-28 (Aug. 23, 1989).

The EN to heading 5605, HTSUS, provides as follows:

This heading covers :

(1) **Yarn consisting of any textile material (including monofilament, strip and the like and paper yarn) combined with metal thread or strip,** whether obtained by a process of twisting, cabling or by gimping, whatever the proportion of the metal present. The gimped yarns are obtained by wrapping metal thread or strip spirally round the textile core which does not twist with the metal. Precious metals or plated metals are frequently used.

**(2) Yarn of any textile material (including monofilament, strip and the like, and paper yarn) covered with metal by any other process.** This category includes yarn covered with metal by electro-deposition, or by giving it a coating of adhesive (e.g., gelatin) and then sprinkling it with metal powder (e.g., aluminium or bronze).

The heading also covers products consisting of a core of metal foil (generally of aluminium), or of a core of plastic film coated with metal dust, sandwiched by means of an adhesive between two layers of plastic film.

The heading covers multiple (folded) or cabled yarn containing plies of the yarn referred to above (e.g., fancy cords as used by confectioners, obtained by twisting together two or more metallised yarns as described above). It further includes certain other forms of yarn made in the same way and used for similar purposes, consisting of two or more parallel metallised yarns held together with a binding of metal thread or strip, and yarn or bundles of yarn gimped with yarn of this heading.

Metallised yarn may be gimped. It is used in the manufacture of trimmings and lace and of certain fabrics, as fancy cords, etc.

The heading **does not include** :

(a) Yarn composed of a mixture of textile materials and metal fibres conferring

on them an antistatic effect (**Chapters 50 to 55**, as the case may be)

(b) Yarn reinforced with metal thread (**heading 56.07**).

(c) Cords, galloons or other articles having the character of ornamental trimmings (**heading 58.08**).

(d) Wire or strip of gold, silver, copper, aluminium or other metals (**Sections XIV** and **XV**).

* * * * *

In NY N187601, CBP classified a polyester filament yarn, manufactured by Best Key via the introduction of aluminum or zinc powder into a polyester slurry, in heading 5605, HTSUS, as metalized yarn.

You argue that notwithstanding the extremely minute amount of metal present in the yarn, and the fact that the process of manufacture for the instant yarn is not described in the explanatory notes, that the yarn satisfies the terms of the heading text to heading 5605, HTSUS. You state that there is no minimum amount of metal needed to constitute a metalized yarn of heading 5605, and that the process of manufacture is irrelevant to the classification of the product.

We agree that it is the nature of the product rather than the process of manufacture which is the key consideration in determining whether the product is classifiable in heading 5605. Thus, whether the instant product is a metalized yarn depends on the meaning of that term as used in heading 5605. The term "metalized yarn" is defined in heading 5605, HTSUS as "being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal." The instant product is not a textile yarn or strip combined with metal powder. The yarn itself contains metal, but it was not combined with metal in any way; the polyester slurry was combined with metal prior to the spinning of the yarn. Whether a polyester slurry falls within the meaning of "or the like" is unclear from the legal text alone. The Explanatory Notes to heading 5605, HTSUS, however, provide some guidance as to the scope of the heading.

The ENs to heading 5605, HTSUS, clearly contemplate that not every product combining yarn and metal in some fashion will be considered a metalized yarn for tariff purposes. The ENs specifically describe two types of products covered by heading 5605, HTSUS: 1) Yarn consisting of any textile material (including monofilament, strip and the like and paper yarn) combined with metal thread or strip, and 2) Yarn of any textile material (including monofilament, strip and the like, and paper yarn) covered with metal by any other process. The ENs further emphasize that metalized yarn of heading 5605 is used for decorative purposes, for example "in the manufacture of trimmings and lace and of certain fabrics, as fancy cords, etc.". The ENs specifically exclude yarns composed of a mixture of textile materials and metal fibres, and yarns reinforced with metal thread from classification in heading 5605, HTSUS. Thus, while heading 5605 may allow for new methods of production of metalized yarn, the mere presence of metal in the yarn does not automatically result in classification in heading 5605, HTSUS.

The description of "metalized yarn" in the EN to heading 5605, HTSUS, is also consistent with the common and commercial meaning of the term. When a tariff term is not defined in either the HTSUS or its legislative history, or its meaning is unclear, 'the term's correct meaning is its common meaning.' " *Rocknel Fastener, Inc. v. United States*, 267 F.3d 1354, 1356 (Fed. Cir. 2001)(quoting *Mita Copystar Am. v. United States*, 21 F.3d 1079, 1082(Fed. Cir. 1994)); *see also Smith v. United States*, 508 U.S. 223, 228 (1993) ("When a word is not defined by statute, we normally construe it in accord with its ordinary or natural meaning."). In ascertaining the meaning of undefined terms, "the court may rely upon its own understanding, dictionaries and other reliable sources." *Medline Indus., Inc. v. United States*, 62 F.3d 1407, 1409 (Fed. Cir. 1995); *see also Brookside Veneers, Ltd. v. United States*, 847 F.2d 786, 789 (Fed. Cir. 1988) ("To assist it in ascertaining the common meaning of a tariff term, the court may . . . consult lexicographic and scientific authorities, dictionaries, and other reliable information sources.").

CBP may examine dictionaries and other lexicographic materials to determine the common meaning of the term "metalized yarn". See, e.g., Lonza, Inc. v. United States, 46 F.3d 1098 (Fed. Cir. 1995). The term in question is then construed in accordance with its common and commercial meanings, which are presumed to be the same. See, e.g., Nippon Kogasku (USA), Inc. v. United States, 69 CCPA 89, 673 F.2d 380 (1982); Toyota Motor Sales, Inc. v. United States, 7 C.I.T. 178 (Ct. Int'l Trade 1984); Carl Zeiss, Inc. v. United States, 195 F.3d 1375 (Fed. Cir. 1999); Lonza, 46 F.3d 1098.

Our research and consultation of industry sources confirm that the commercial meaning of "metalized yarn" does not encompass every possible form of yarn with metal added. Instead, "metalized yarn" and similar terms such as "metallic yarn" and "metallic fiber" have a specific meaning, consistent with the Explanatory Note to heading 5605, which does not encompass the Best Key yarns at issue. Therefore, the instant product is not within the scope of the term "metalized yarns" as understood by the common and commercial meaning of the term.

The common and commercial meaning of the term indicate that "metalized yarn" is commonly understood to mean either a pre-existing yarn consisting of any textile material combined with metal, or a plastic film deposited with metal and slit into yarn, generally used for a decorative purpose. For example, FTC regulations define "metallic" fiber as "A manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal." See Section 303.7 of the Rules and Regulations Under the Textile Fiber Products Identification Act (Generic names and definitions for manufactured fibers), 16 CFR § 303.7. CBP also consulted numerous technical sources on metallic yarns and fibers, none of which referenced a product such as that at issue in their discussion of metalized yarn. Indeed, no reference material on textiles was found in our research which described similar products as metalized yarns. Rather, technical sources on metalized yarn noted that metallic yarns consist of pre-existing yarn or plastic film bonded to metal, as do producers of metalized yarns such as Huntingdon Yard Mill (http://www.hymill.com/usa/?page_id=2), SwicoFil

(http://www.swicofil.com/metallicyarn.html), Bally Ribbon Mill (http://www.ballyribbon.com/fibers/performance/metalized-yarns) and Metlon (http://www.metlon.com/metallic.htm). For example, J.J. Pizzuto's Fabric Science defines "metallic" fiber as "a manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal...metallic fibers are used primarily for decorative effects, although when placed in carpeting (as little as 2 percent) the functional effect is to lessen the accumulation of static." Joseph J. Pizzuto et al. ed, J.J. Pizzuto's Fabric Science, 56 (10th ed. 2012). "Metallic Fibers" by Anita A. Desai, an Assistant Professor at the Sarvajanik College of Engineering & Technology, Textile Technology Department, similarly defines a metallic yarn as "a continuous flat monofilament produced by a combination of plastic film and metallic component so that the metallic component is protected." See http://www.fibre2fashion.com/industry-article/3/213/metallic-fibres1.asp (2007). The International Bureau for the Standardization of Man-Made Fibres further notes that "metalized" yarns are yarns coated with metal. *Terminology of Man-Made Fibres*, Int'l Bur. for the Standardization of Man-Made Fibres (2009), available at http://www.bisfa.org/Portals/BISFA/Terminology/BISFA%20Terminology2009%20% 28final%20version%29.pdf. See also G. Mohan Kumar, V. S. Sidharth Metallic Yarns and Fibres in Textile, Department Of Textile Technology, Bannari Amman Institute of Technology (2011); Irfan Ahmed Shaikh, Pocket Textile Expert 1st Edition; Virginia Hencken Elsasser, Textiles: Concepts and Principles, (2nd ed 2010); Allen C. Cohen Beyond Basic Textiles (1997); Jacqueline P. Kraschwitz, Polymers: Fibers and Textiles, a Compendium(1990).

Furthermore, many technical definitions of "metallic" yarns or fibers stress that they are used primarily for decorative purposes. See e.g., J.J. Pizzuto's Fabric Science, supra, at 81 ("Metallic yarns are mostly used for decorative rather than functional purposes."); Polymers: Fibers and Textiles, a Compendium, *supra* ("Such metallic yarns are used primarily for decorative purposes."); "Metallic Fibers", *supra*. A typical metalized yarn or fabric thus has a distinctive metallic appearance (hence its popularity for decorative applications). However, the instant yarns look and feel like a standard polyester fiber, as does the resulting fabric. The presence of metal is not discernible except by laboratory testing. Indeed, the Best Key garments made from this yarn are stated to be made from "100% polyester fiber" with no mention of the added metal.

Similarly, textile industry experts consulted by CBP from the American Fiber Manufacturers Association and the National Council of Textile Organizations were in agreement that the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn. This is consistent with what CBP has classified in heading 5605 in the past, and consistent with the Explanatory Notes to heading 5605, HTSUS. Thus, we conclude that the term "metalized yarn" as commonly and commercially understood, is a manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal, including metal sandwiched between layers of plastic, as in Lurex yarns, having a visible metallic effect or appearance.

In your comments responding to the proposed revocation, you submit an affidavit from Ingrid Johnson, editor of the Fairchild's Dictionary of Fashion. Ms. Johnson affirms that the Best Key yarns at issue are, in her opinion, metalized yarns, within the following definition of metallic yarn (to be published in the upcoming 8th edition of the Fairchild's Dictionary of Fashion):

> "most present day versions of metallic yarn are forms of slit plastic films combined with either sheet aluminum or metallic particles. Originally these were made by sandwiching aluminum foil between two layers of cellulose acetate or cellulose acetate butyrate film with coloring material in the adhesive. While the form of yarn made from narrow strips of this material continues in the market, there are a number of other versions. Polyester film is stronger than the acetate and makes it possible to use thinner gauges of film. All of these yarns are available in a variety of thicknesses and widths as well as in staple form for spinning with other fibers."

We note that this definition of metallic yarn is completely consistent with those cited above. It does not reference any method of production similar to that used by Best Key; it also clearly states that most versions of metallic yarn are produced from slit plastic films combined with aluminum. Although this definition allows for the possibility of other combinations of textile and metal, not specifically mentioned, being considered metallic yarn, it does not state that any textile yarn containing metal must automatically be considered a metallic yarn. Hence, whether this definition is intended to include such products or not, we do not believe that it supports the argument that the instant Best Key yarns should be considered metalized yarns. Such an interpretation would be far more expansive than the plain text of the heading, the ENs or the technical definitions would support. Indeed, it is difficult to imagine what wouldn't fall within the scope of metalized yarn based on such a reading. For example, the Fairchild's definition does not explicitly exclude either antistatic yarns, or yarns reinforced with metal thread, and yet the EN to heading 5605 excludes both of these from the heading. Ms. Johnson offers Angelina® fibers as an example of a metalized yarn which, in her view, is similar to the Best Key yarn in that the metal is not fully apparent. However, Angelina® fibers do have a distinctive and notable metallic, luminescent sheen. See e.g., https://www.google.com/search?q=angelina+fibers&client=firefox-a&hs=9r4&rls=org. mozilla:en-US:official&source=lnms&tbm=isch&sa=X&ei=ZEUqUry-LPao4APyh4DoBA&ved=0CAkQ_AUoAQ&biw=988&bih=614; http://www.texturatrading.com/angelina.html; http://www.meadowbrookglitter.com/angelina/pdf/knitting_intl.pdf.

Ingrid Johnson's affidavit affirms that in a metalized yarn, the metal is added for a specific purpose, to add desirable characteristics to a fabric such as a metallic appearance, anti-microbial properties, or UV protection. Specifically, Ingrid Johnson states that "While in some applications, metal is added to create a shiny appearance, this is not a requirement for metalized yarn. ...This is increasingly the case as nano-metals are added to fibers to impart a variety of practical, non-visual properties." You

claim that the aluminum and zinc are added to the Best Key yarns for anti-microbial purposes. Assuming that yarns metalized for a specific, practical, non-decorative purpose are within the scope of heading 5605 (although the emphasis in the Explanatory Notes on the decorative use of metalized yarns, as well as the specific exclusion of yarns with antistatic effects from heading 5605, imply otherwise) you do not present any evidence that the aluminum or zinc added to the instant yarns impart any anti-microbial properties or UV protection to the fiber, or even that they could have such an effect in such low concentrations. In support of the claim that metals impart anti-microbial or UV protection properties to the fiber, you cite an article from Textile Review Magazine, which details the various applications of nanometals in textiles. See SS. Chinchwade and Maneet Srivastava, *Application of Nanometals in Textiles, Part 1*, Textile Review Magazine (April 2012), reprinted at www.technicaltextile.net. This article lists the applications of various metals and compounds, including zinc oxide, aluminum trioxide, silver and titanium dioxide. Titanium dioxide and zinc oxide[1] are stated to provide UV protection, aluminum trioxide is used for water-repellent finishing, and silver is used for anti-bacterial finishing. The article does not support the use of either aluminum or zinc for anti-microbial applications, or aluminum for UV protection. Our research indicates that silver, copper and copper alloys are the most common and effective metals used for antimicrobial applications. The Best Key garments made from the instant yarns examined by CBP also made no mention of any antimicrobial properties (or any reference to the metal content at all) on the garment tags or labels. Claims of anti-microbial properties are also subject to FDA and EPA regulation and verification; to our knowledge, neither aluminum nor zinc in any form are registered with the EPA as anti-microbial pesticides. See e.g., http://www.epa.gov/oppad001/. In any case, adding metal before extrusion, for antimicrobial, antistatic or other purposes, is not itself a new procedure. Heretofore, such products have not been considered metalized yarns. See, e.g., http://www.noblebiomaterials.com/category.asp?itemid=380; http://www.trevira.com/en/textiles-made-from-trevira/antimicrobial-textiles/how-trevira-bioactive-works.html; http://www.cloverbrook.com/MerylSkinlifePage.htm.

In your comments in response to the proposed revocation, you cite to various CBP rulings which you claim classified yarns having no metallic appearance in heading 5605, HTSUS. These include: NY N062518, dated June 3, 2009; NY L82752, dated March 10, 2005; NY R00713, dated August 23, 2004; NY J84177, dated September 17, 2003; NY J82793, dated April 9, 2003 (revoked by HQ 967829, dated February 27, 2006); NY I80137. dated April 9, 2002; NY J84274, dated May 6, 2000; NY B89128, dated September 3, 1997; NY B89130, dated September 3, 1997; and NY A89028, dated November 7, 1996. We note that in each of the cases cited above, the yarns are either described as "decorative" or "metallic", or are used in decorative applications such as decorating packages (NY N062518, NY R00713).

In summary, the Best Key yarns do not conform to any common or commercial meaning of metalized or metallic yarn, because the products that are considered

[1] It is unclear whether zinc or aluminum alone have similar properties, or whether the UV protection or water-repelllent effects accrue solely from the metal oxide compounds.

metalized yarns or fibers consist of a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn, having a metallic character of appearance which is usually the result of the presence of a significantly higher metal content than the instant products.

Finally, we note that while CBP does not impose a strict requirement with respect to the amount of metal that must be present in order for a yarn to be considered metalized, tests conducted by the CBP Laboratory indicate that the samples of Best Key's yarns submitted for analysis contain only trace amounts of metal. The highest level of metal present in the samples analyzed shows titanium in the amount of 1608 parts per million and aluminum in the amount of 741 ppm. These results indicate that the subject yarns contain at most .002% metal by volume. Even assuming that 1900 ppm aluminum and 2800 ppm of zinc are present in the instant yarns, as stated by the importer, the amount of aluminum or zinc by volume would still only amount to roughly .002%, or 0.7% by weight. In contrast, a yarn that is 1% metal by volume has 100,000 ppm. Given that many products and preparations used in textiles, such as those of heading 3809[2], contain metallic substances, and even natural fibers may naturally contain trace amounts of metal absorbed from the soil, many yarns may consequently have traces of metal simply as a result of common treatments such as dye fixing or delustring. To classify any fiber with as little metal as is present in the instant yarn in heading 5605 would expand the heading far beyond its current scope, to include any yarns which contain trace amounts of metal as a byproduct of common textile treatments and which have never been considered metalized yarn. As noted above, by contrast, the products recognized as metalized yarns in the textile industry have much higher concentrations of metal, with the result that the metal is immediately apparent.

HOLDING:

The Best Key yarn is classified in heading 5402, HTSUS, specifically subheading 5402.47.90, HTSUS, which provides for "Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex: Other, of polyesters: Other." The 2013 column one, general rate of duty is 8% *ad valorem*.

Duty rates are provided for your convenience and subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided online at www.usitc.gov/tata/hts/.

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[2] Heading 3809, HTSUS, covers, inter alia, delustring agents, dirt-repellent finishes, and mordants. Delustrants generally contain metals such as titanium oxide or zinc oxide. Dirt repellent agents are generally based on silicic acid, aluminium compounds or organic compounds;mordants, used to fix dyes in textiles, are usually based on metallic salts (e.g., aluminium). See EN 38.09.

EFFECT ON OTHER RULINGS:

NY N187601, dated October 25, 2011, is hereby revoked.

In accordance with 19 U.S.C. 1625(c), this ruling will become effective 60 days after publication in the CUSTOMS BULLETIN.

Sincerely,

**Ieva O'Rourke**

for Myles B. Harmon, Director,
Commercial and Trade Facilitation Division

OT:RR:CTF:TCM
CKG
9/12/13

## U.S. CUSTOMS AND BORDER PROTECTION

## REVOCATION OF RULING LETTER

## AND REVOCATION OF TREATMENT RELATING TO THE

## TARIFF CLASSIFICATION OF A POLYESTER MONOFILAMENT YARN

**AGENCY:** U.S. Customs and Border Protection; Department of Homeland Security.

**ACTION:** Notice of revocation of a ruling letter and revocation of treatment relating to tariff classification of a polyester monofilament yarn.

**SUMMARY:** Pursuant to section 625(c), Tariff Act of 1930 (19 U.S.C. 1625 (c)), as amended by Section 623 of Title VI (Customs Modernization) of the North American Free Trade Agreement Implementation Act (Pub.L. 103-182, 107 Stat. 2057), this notice advises interested parties that Customs and Border Protection (CBP) is revoking New York Ruling Letter (NY) N187601, dated October 25, 2011, with regard to the tariff classification of a polyester monofilament yarn with added metal under the Harmonized Tariff Schedule of the United States (HTSUS). Similarly, CBP is also revoking any treatment previously accorded by CBP to substantially identical transactions. Notice of the proposed action was published in the Customs Bulletin Vol. 47, No. 18, on April 24, 2013. Two comments were received in opposition to this Notice.

**EFFECTIVE DATE:** This action is effective for merchandise entered or withdrawn from warehouse for consumption on or after [60 days from the date of publication of notice in the Customs Bulletin].

**FOR FURTHER INFORMATION CONTACT:** Claudia Garver, Tariff Classification and Marking Branch: (202) 325-0024

**SUPPLEMENTARY INFORMATION:**

## BACKGROUND

On December 8, 1993 Title VI (Customs Modernization) of the North American Free Trade Agreement Implementation Act (Pub. L. 103-182, 107 Stat. 2057)(hereinafter "Title VI"), became effective. Tile VI amended many sections of the Tariff Act of 1930, as amended, and related laws. Two new concepts which emerge from the law are "**informed compliance**" and "**shared responsibility**." These concepts are premised on the idea that in order to maximize voluntary compliance with customs laws and regulations, the trade community needs to be clearly and completely informed of its legal obligations. Accordingly, the law imposes a greater obligation on CBP to provide the public with improved information concerning the trade community's responsibilities and rights under the customs and related laws. In addition, both the trade and CBP share responsibility in carrying out import requirements. For example, under section 484 of the Tariff Act of 1930, as amended (19 U.S.C. §1484), the importer of record is responsible for using reasonable care to enter, classify and value imported

merchandise, and to provide any other information necessary to enable CBP to properly assess duties, collect accurate statistics and determine whether any other applicable legal requirement is met.

Pursuant to section 625(c)(1), Tariff Act of 1930 (19 U.S.C. §1625(c)(1)), as amended by section 623 of Title VI, notice proposing to revoke NY N187601 was published on April 24, 2013, in Volume 47, Number 18 of the Customs Bulletin. Two comments were received in opposition to this notice.

As stated in the proposed notice, this action will cover any rulings on the subject merchandise which may exist but have not been specifically identified. CBP has undertaken reasonable efforts to search existing databases for rulings in addition to the ruling identified above. Any party who has received an interpretive ruling or decision (*i.e.*, ruling letter, internal advice memorandum or decision or protest review decision) on the merchandise subject to this notice should have advised CBP during the comment period.

Similarly, pursuant to section 625 (c)(2), Tariff Act of 1930, as amended (19 U.S.C. 1625 (c)(2)), CBP is revoking any treatment previously accorded by CBP to substantially identical transactions. Any person involved in substantially identical transactions should have advised CBP during this notice period. An importer's failure to advise CBP of substantially identical transactions or of a specific ruling not identified in this notice, may raise issues of reasonable care on the part of the importer or its agents for importations of merchandise subsequent to the effective date of this final decision.

In NY N187601, CBP determined that a polyester yarn, produced by mixing metal powder into a polyester slurry prior to extrusion of the yarn, was classified in heading 5605, HTSUS, which provides for ""Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal."

Pursuant to 19 U.S.C. 1625(c)(1), CBP is revoking NY N056378 and revoking or modifying any other ruling not specifically identified, in order to reflect the proper classification of the subject yarn in heading 5402, HTSUS, according to the analysis contained in Headquarters Ruling Letter (HQ) H202560, which is attached to this document. Additionally, pursuant to 19 U.S.C. 1625(c)(2), CBP is revoking any treatment previously accorded by CBP to substantially identical transactions.

**DATED:** **Ieva O'Rourke**

Myles B. Harmon, Director
Commercial and Trade Facilitation Division

Attachment

OT:RR:CTF:TCM
GKG
9/11/13



13-367 CBP AR000012

SA000104

# PROPOSED REVOCATION OF RULING LETTER AND PROPOSED REVOCATION OF TREATMENT RELATING TO THE TARIFF CLASSIFICATION OF A POLYESTER MONOFILAMENT YARN

**AGENCY:** U.S. Customs and Border Protection; Department of Homeland Security.

**ACTION:** Notice of revocation of a ruling letter and proposed revocation of treatment relating to the tariff classification of a polyester monofilament yarn.

**SUMMARY:** Pursuant to section 625(c), Tariff Act of 1930 (19 U.S.C. 1625 (c)), as amended by Section 623 of Title VI (Customs Modernization) of the North American Free Trade Agreement Implementation Act (Pub.L. 103–182, 107 Stat. 2057), this notice advises interested parties that Customs and Border Protection (CBP) proposes to revoke New York Ruling Letter (NY) N187601, dated October 25, 2011, with regard to the tariff classification of a polyester monofilament yarn with added metal under the Harmonized Tariff Schedule of the United States (HTSUS). CBP also proposes to revoke any treatment previously accorded by CBP to substantially identical transactions. Comments are invited on the correctness of the proposed action.

**DATES:** Comments must be received on or before May 20, 2013.

**ADDRESSES:** Written comments are to be addressed to Customs and Border Protection, Office of International Trade, Regulations and Rulings, Attention: Trade and Commercial Regulations Branch, 90 K St. N.E., 10th Floor, Washington, D.C. 20229–1179. Submitted comments may be inspected at Customs and Border Protection, 90 K St. N.E., Washington, D.C. 20229 during regular business hours. Arrangements to inspect submitted comments should be made in advance by calling Mr. Joseph Clark at (202) 325–0118.

**FOR FURTHER INFORMATION CONTACT:** Claudia Garver, Tariff Classification and Marking Branch: (202) 325–0024

**SUPPLEMENTARY INFORMATION:**

## Background

On December 8, 1993 Title VI (Customs Modernization) of the North American Free Trade Agreement Implementation Act (Pub. L. 103–182, 107 Stat. 2057) (hereinafter "Title VI"), became effective.

Tile VI amended many sections of the Tariff Act of 1930, as amended, and related laws. Two new concepts which emerge from the law are "**informed compliance**" and "**shared responsibility**." These concepts are premised on the idea that in order to maximize voluntary compliance with customs laws and regulations, the trade community needs to be clearly and completely informed of its legal obligations. Accordingly, the law imposes a greater obligation on CBP to provide the public with improved information concerning the trade community's responsibilities and rights under the customs and related laws. In addition, both the trade and CBP share responsibility in carrying out import requirements. For example, under section 484 of the Tariff Act of 1930, as amended (19 U.S.C. §1484), the importer of record is responsible for using reasonable care to enter, classify and value imported merchandise, and to provide any other information necessary to enable CBP to properly assess duties, collect accurate statistics and determine whether any other applicable legal requirement is met.

Pursuant to section 625 (c)(1), Tariff Act of 1930, as amended (19 U.S.C. 1625 (c)(1)), this notice advises interested parties that CBP is proposing to revoke one ruling letter pertaining to the tariff classification of a polyester monofilament yarn, manufactured by mixing metal powder into a polyester slurry prior to extrusion of the yarn. Although in this notice, CBP is specifically referring to the revocation of New York Ruling Letter N187601, dated October 25, 2011 (Attachment A), this notice covers any rulings on this merchandise which may exist but have not been specifically identified. CBP has undertaken reasonable efforts to search existing databases for rulings in addition to the ones identified. No further rulings have been found. Any party who has received an interpretive ruling or decision (i.e., ruling letter, internal advice memorandum or decision or protest review decision) on the merchandise subject to this notice should advise CBP during this notice period.

Similarly, pursuant to section 625 (c)(2), Tariff Act of 1930, as amended (19 U.S.C. 1625 (c)(2)), CBP proposes to revoke any treatment previously accorded by CBP to substantially identical transactions. Any person involved in substantially identical transactions should advise CBP during this notice period. An importer's failure to advise CBP of substantially identical transactions or of a specific ruling not identified in this notice, may raise issues of reasonable care on the part of the importer or its agents for importations of merchandise subsequent to the effective date of the final notice of this proposed action.

In NY N187601, CBP determined that a polyester yarn, produced by mixing metal powder into a polyester slurry prior to extrusion of the yarn, was classified in heading 5605, HTSUS, which provides for

""Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal."

Pursuant to 19 U.S.C. 1625(c)(1), CBP proposes to revoke NY N187601, and to revoke or modify any other ruling not specifically identified, in order to reflect the proper classification of the subject yarn in heading 5402, HTSUS, according to the analysis contained in proposed Headquarters Ruling Letter (HQ) H202560, set forth as Attachment B to this document. Additionally, pursuant to 19 U.S.C. 1625(c)(2), CBP is proposing to revoke any treatment previously accorded by CBP to substantially identical transactions.

Before taking this action, consideration will be given to any written comments timely received.

Dated: April 8, 2013

Ieva K. O'Rourke
*for*
Myles B. Harmon,
*Director*
*Commercial and Trade Facilitation Division*

Attachments

[ATTACHMENT A]

N187601

October 25, 2011
CLA-2–56:OT:RR:NC:N3:351
CATEGORY: Classification
TARIFF NO.: 5605.00.9000

MS. MARGARET POLITO
ATTORNEY-AT-LAW
*222 RIVERSIDE DRIVE, SUITE 14E*
*NEW YORK, NY 10025*

RE: The tariff classification of metalized yarns from China

DEAR MS. POLITO:

In your letter dated October 3, 2011, you requested a tariff classification ruling on behalf of your client, Best Key Textiles Limited of Shenzhen, China.

You submitted two spools of a product you describe as polyester filament yarn, one of which you state is combined with aluminum powder and the other, zinc powder. Both, you state, contain titanium.

You state that the aluminum or zinc powder is added to the slurry that is extruded to create the filaments. For tariff purposes, a yarn combined with metal in the form of powder is considered a metalized yarn.

The applicable subheading for the metalized yarn will be 5605.00.9000, Harmonized Tariff Schedule of the United States (HTSUS), which provides for metalized yarn, whether or not gimped, being textile yarn, combined with metal in the form of thread, strip, or powder or covered with metal; Other. The general rate of duty will be 13.2% ad valorem.

Duty rates are provided for your convenience and are subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided on the World Wide Web at http://www.usitc.gov/tata/hts/.

This ruling is being issued under the provisions of Part 177 of the Customs Regulations (19 C.F.R. 177).

A copy of the ruling or the control number indicated above should be provided with the entry documents filed at the time this merchandise is imported. If you have any questions regarding the ruling, contact National Import Specialist Mitchel Bayer at (646) 733–3102.

*Sincerely,*

ROBERT B. SWIERUPSKI
*Director*
*National Commodity Specialist Division*

[ATTACHMENT B]

HQ H202560
CLA-2 OT:RR:CTF:TCM H202560 CkG
CATEGORY: Classification
TARIFF NO: 5402.47.90

Mr. John M. Peterson
Neville Peterson, LLP
*17 State Street 19th Floor*
*New York, NY 10004*

RE: Revocation of New York Ruling Letter N187601; yarn

Dear Mr. Peterson:

This is in reference to New York Ruling Letter N187601, issued to Ms. Margaret Polito on behalf of Best Key Textiles, Limited (Best Key), on October 25, 2011. We have reconsidered this ruling and find that the classification of the polyester filament yarn at issue as metalized yarn of heading 5605, Harmonized Tariff Schedule of the United States (HTSUS), was in error.

**FACTS:**

NY N187601 described the subject merchandise as follows:

> two spools of...polyester filament yarn, one of which you state is combined with aluminum powder and the other, zinc powder. Both, you state, contain titanium. You state that the aluminum or zinc powder is added to the slurry that is extruded to create the filaments.

You state that Best Key produces two products. The first is an 80 denier [1] polyester yarn claimed to contain 1900 ppm of aluminum distributed evenly throughout the polyester matrix, with an unspecified amount of titanium dioxide also added as a delusterant. You state that the total presence of metal in the yarn (aluminum, titanium and zinc) accounts for about 0.7% of the total yarn weight. The second product is a 79.6 denier polyester yarn stated to contain 2800 ppm of zinc distributed evenly throughout the polyester matrix with an unspecified amount of titanium dioxide also added as a delusterant. The total presence of metal in the yarn (zinc, titanium and aluminum) is stated to account for about 0.74% of the total yarn weight. However, we note that the CBP Laboratory in New York tested several samples of entries of Best Key garments with different results. The highest level of metal present in the samples analyzed by the CBP Laboratory shows titanium in an amount of 1608 parts per million and aluminum in the amount of 741 ppm, for a total metal content of 0.002% (by volume).

The production process of Best Key's polyester yarns begins with the drawing of polyester yarn. The extruded polyester yarn is broken up into chips and melted to produce a polyester slurry. At this point, aluminum or zinc in powder form is added to the slurry, and titanium dioxide is added as a delusterant. The polymer mixture is then forced through a spinneret, which yields yarns of the desired thickness. Due to the small amount of metal in the yarn, the presence of the metal is not discernible to the naked eye.

[1] A denier is a unit of measure for the linear mass density of fibers.

**ISSUE:**

Whether the subject yarns are classified in heading 5605, HTSUS, as metalized yarn, or heading 5402, HTSUS, as synthetic filament yarn.

**LAW AND ANALYSIS:**

Merchandise is classifiable under the HTSUS in accordance with the General Rules of Interpretation (GRIs). GRI 1 provides that classification shall be determined according to the terms of the headings and any relative section or chapter notes and, provided such headings or notes do not otherwise require, according to the remaining GRIs 2 through 6. GRI 6, HTSUS, requires that the GRI's be applied at the subheading level on the understanding that only subheadings at the same level are comparable. The GRI's apply in the same manner when comparing subheadings within a heading.

The HTSUS provisions under consideration are as follows:

| | |
|---|---|
| 5402: | Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex: |
| 5402.47: | Other, of polyesters: |
| 5402.47.90: | Other. . . |
| * * | * * |
| 5605: | Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal: |
| 5605.00.90: | Other... |
| * * | * * |

In NY N187601, CBP classified a polyester filament yarn, manufactured by Best Key via the introduction of aluminum or zinc powder into a polyester slurry, in heading 5605, HTSUS, as metalized yarn.

You argue that nothwithstanding the extremely minute amount of metal present in the yarn that the yarn satisfies the terms of the heading text to heading 5605, HTSUS, and that there is no minimimum amount of metal needed to constitute a metalized yarn of heading 5605. In addition, you argue that despite the fact that the process of manufacture for the instant yarn is not described in the explanatory notes that the heading text is broad enough to encompass the instant product. In fact you argue that the process of manufacture is irrelevant to the classification of the product.

We agree that it is the nature of the product rather than the process of manufacture which is the key consideration in determining whether the product is classifiable in heading 5605.

CBP has held in the prior rulings that tariff terms are written for the future as well as the present, which means that tariff terms are expected to encompass merchandise not known to commerce at the time of their enactment, as long as the new article possesses an essential resemblance to the one named in the statute. Thus, while heading 5605 may allow for new methods of production of metalized yarn, the article still must have the essential elements of metalized yarn. It remains to apply this test to the instant merchandise. In order to determine what the essential qualities of the metalized yarn of the heading are, CBP may examine dictionaries and other lexicographic materials to determine the term's common meaning. *See, e.g.*,

*Lonza, Inc. v. United States*, 46 F.3d 1098 (Fed. Cir. 1995). The term in question is then construed in accordance with its common and commercial meanings, which are presumed to be the same. *See, e.g.*, Nippon Kogasku (USA), Inc. v. United States, 69 CCPA 89, 673 F.2d 380 (1982); Toyota Motor Sales, Inc. v. United States, 7 C.I.T. 178 (Ct. Int'l Trade 1984); Carl Zeiss, Inc. v. United States, 195 F.3d 1375 (Fed. Cir. 1999); Lonza, 46 F.3d 1098.

Our research and consultation of industry sources indicate that the commercial meaning of "metalized yarn" does not encompass the Best Key yarns at issue. The instant product does not possess an essential resemblance to metalized yarns as understood by the common and commercial meaning of the term. For example, FTC regulations define "metallic" fiber **as** "A manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal." ***See*** **Section 303.7 of the** Rules and Regulations Under the Textile Fiber Products Identification Act (**Generic names and definitions for manufactured fibers),** 16 CFR § 303.7. CBP also consulted numerous technical sources on metallic yarns and fibers, none of which referenced such a product in their discussion of metalized yarn. Indeed, no reference material on textiles was found in our research which described similar products as metalized yarns. Rather, technical sources on metalized yarn noted that metallic yarns consist of pre-existing yarn or plastic film bonded to metal, as do producers of metalized yarns such as Huntingdon Yard Mill (*http://www.hymill.com/usa/?page_id=2*), SwicoFil (*http://www.swicofil.com/metallicyarn.html*), Bally Ribbon Mill (*http://www.ballyribbon.com/fibers/performance/metalized-yarns*) and Metlon (*http://www.metlon.com/metallic.htm*). For example, "Metallic Fibers" by Anita A. Desai, an Assistant Professor at the Sarvajanik College of Engineering & Technology, Textile Technology Department, defines a metallic yarn as "a continuous flat monofilament produced by a combination of plastic film and metallic component so that the metallic component is protected." *See http://www.fibre2fashion.com/industry-article/3/213/metallic-fibres1.asp* (2007). The International Bureau for the Standardization of Man-Made Fibres further notes that "metalized" yarns are yarns coated with metal. *Terminology of Man-Made Fibres*, Int'l Bur. for the Standardization of Man-Made Fibres (2009), available at *http://www.bisfa.org/Portals/BISFA/Terminology/BISFA%20Terminology2009%20% 28final%20version%29.pdf*. *See also* G. Mohan Kumar, V. S. Sidharth *Metallic Yarns and Fibres in Textile*, Department Of Textile Technology, Bannari Amman Institute of Technology (2011); Irfan Ahmed Shaikh, *Pocket Textile Expert 1st Edition*; Virginia Hencken Elsasser, *Textiles: Concepts and Principles, 2nd ed*, Centenary College (2010); Allen C. Cohen *Beyond Basic Textiles* (1997).

Similarly, textile industry experts consulted by CBP from trade groups such as the American Fiber Manufacturers Association and the National Council of Textile Organizations were in agreement that the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn. This is consistent with what CBP has classified in heading 5605 in the past.

It is also noteworthy that the fiber combined with metal in the process used by Best Key looks and feels like a standard polyester fiber, as does the resulting fabric. The presence of metal is not discernible except by laboratory testing. However, a typical metalized yarn or fabric has a distinctive metallic

appearance (hence its popularity for decorative applications). *See e.g.*, "Metallic Fibers", *supra*. In addition, adding metal before extrusion, for antimicrobial, antistatic or other purposes, is not itself a new procedure. Heretofore, such products have not been considered metalized yarns. *See, e.g., http://www.noblebiomaterials.com/category.asp?itemid=380; http://www.trevira.com/en/textiles-made-from-trevira/antimicrobial-textiles/how-trevira-bioactive-works.html; http://www.cloverbrook.com/MerylSkinlifePage.htm.*

Finally, none of the exemplars mentioned in the EN to heading 5605, HTSUS, describe a product in which the presence of metal is not visually apparent. On the contrary, most describe a substantial presence of metal, either in the form of coatings, or other process. This is further support for the conclusion that the Best Key products do not have the character of products of heading 5605, HTSUS.

In summary, the Best Key yarns do not conform to the commercial meaning of metalized or metallic yarn, because the products that are considered metalized yarns or fibers have a metallic character of appearance, which is usually the result of the presence of a significantly higher metal content than the instant products.

Finally, we note that while CBP does not impose a strict requirement with respect to the amount of metal that must be present in order for a yarn to be considered metalized, tests conducted by the CBP Laboratory indicate that the samples of Best Key's yarns submitted for analysis contain only trace amounts of metal. The highest level of metal present in the samples analyzed shows titanium in the amount of 1608 parts per million and aluminum in the amount of 741 ppm. These results indicate that the subject yarns contain at most .002% metal by volume. Even assuming that 1900 ppm aluminum and 2800 ppm of zinc are present in the instant yarns, as stated by the importer, the amount of aluminum or zinc by volume would still only amount to roughly .002%, or 0.7% by weight. In contrast, a yarn that is 1% metal by volume has 100,000 ppm. Given that natural fibers in particular may naturally contain trace amounts of metal absorbed from the soil, to classify any fiber with as little metal as is present in the instant yarn in heading 5605, HTSUS, would run the risk of including in heading 5605 products with metal naturally present. As noted above, by contrast, the products recognized as metalized yarns in the textile industry have much higher concentrations of metal, with the result that the metal is immediately apparent.

**HOLDING:**

The Best Key yarn is classified in heading 5402, HTSUS, specifically subheading 5402.47.90, HTSUS, which provides for "Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex: Other, of polyesters: Other." The 2012 column one, general rate of duty is 8% *ad valorem*.

Duty rates are provided for your convenience and subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided online at *www.usitc.gov/tata/hts/*.

EFFECT ON OTHER RULINGS:
NY N187601, dated October 25, 2011, is hereby revoked.

*Sincerely,*

Myles B. Harmon,
*Director,*
*Commercial and Trade Facilitation Division*

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May 20, 2013

**Via Electronic Mail**

U.S. Customs and Border Protection
Office of International Trade (R&R)
Attn: Trade and Commercial Regulations Branch
90 K Street, N.E.
Washington, DC 20229

Proposed Revocation - Tariff Classification of a
Polyester Monofilament Yarn
47:18 Cust. Bull. & Decs. 33 (April 24, 2013)

Dear Mr. Harmon:

These comments are submitted on behalf of clients of McGuireWoods, LLP who have imported or are interested in importing textile products, including apparel, produced with metallic yarn of the type referred to in NY N187601 (October 25, 2011) and which is the subject of the proposed revocation. The clients have relied on the ruling now slated for revocation.

The proposed revocation relates to the classification of polyester filament yarn produced using a slurry to which aluminum or zinc nano powder is added. N187601 held that the yarn was classified in subheading 5605.00.90, Harmonized Tariff Schedule of the United States ("HTS"). As Customs and Border Protection ("CBP") stated in NY N187601, it is our understanding for tariff purposes, a yarn combined with metal including metal in the form of powder is considered a metalized yarn. The revocation would change that understanding.

We are aware of the comments filed on behalf of Best Key Textiles Ltd. ("Best Key") and are in full agreement with the arguments and points raised there. We do not repeat each of the arguments here. The following comments are limited to two legal points; reliance on the definitions of another federal agency to determine tariff classification, and the flawed analysis surrounding application of the axiom that a tariff provision encompasses products not known at the time of enactment as long as the new

product essentially resembles the tariff description. We also address what appear to be irregularities in the process leading to the proposed revocation.

We first address the question of common and commercial meaning, and in particular, reliance on the generic textile names promulgated by the United States Federal Trade Commission ("FTC").

The generic textile names appear at 16 C.F.R. § 303.7 and include a definition of metallic yarn. The definition was promulgated in 1959; it is over a half century old.[1] It has little or nothing to do with the current understanding of what constitutes a metalized yarn. It is obvious that there have been a number of changes in the relevant technology since that time. The FTC's definition has no bearing on current commercial understanding of the term. It is simply outdated.

The same observation applies to at least one of the reference materials cited in the proposed revocation, Desai, "Metallic Fibers". The most recent of the materials relied on by Ms. Desai is dated 2001 and some are as remote as 1959, the same vintage as the FTC definition.

Further, reference to the FTC definition is a departure from what has been the understanding of CBP and the courts in terms of whether other agency definitions have any impact on tariff definitions. In general, they do not.

There are, however, situations where it may be appropriate to refer to another agency's definitions. An example is the reference to the definition of children's sleepwear in the Consumer Product Safety Commission regulations. As noted in HQ 951206 (September 3, 1992), the CPSC has developed a great deal of expertise in what constitutes children's sleepwear. That is a common sense approach that justifies reference to CPSC guidelines. That does not appear to be the case with the FTC and the definition of metallic yarn. The FTC does not have the same degree of expertise and has not examined the definition of metallic or metalized yarn in recent years. The last time the FTC looked at the definition was over a half a century ago.

The more usual approach to use of definitions employed by other federal agencies is that found in HQ 966568 (February 4, 2003):

> (A)s a general rule, terms defined in non-tariff statutes do not determine the meaning of a term for tariff purposes. Other agency determinations are relevant [ ] only where the tariff provision is a use provision and the other agency decision limits certain uses of the imported merchandise. [Citations omitted]

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[1] See 24 *Federal Register* No. 107 (June 2, 1959), extracts attached.

Clearly, the reliance on the FTC's definition is inconsistent with prior rulings and moreover is misplaced as too remote.

The proposed revocation cites a number of publications and articles that define metalized yarn in much the same fashion as 16 C.F.R § 303(o). Best Key's comments counter with the affirmation of Professor Johnson of the Fashion Institute of Technology to the effect that the subject yarns are metalized yarn and, further, that the definitions of metalized yarns in the forthcoming edition of *Fairchild's Dictionary of Fashion* will recognize yarns with metal nano powders. CBP has considered this publication authoritative; *e.g.*, HQ H02122 (August 6, 2010), and many other Headquarters Office rulings. Professor Johnson's understanding and the revised *Fairchild's* definition are more persuasive since, unlike the publications cited in the proposed revocation current technology is recognized.

As the proposed revocation acknowledges, tariff provisions contemplate future improvements. The only restriction is that the new product bear an essential resemblance to the article described in the tariff provision. The Best Key yarn satisfies all of the requirements of the relevant subheading, a point that the proposed revocation essentially concedes, since it points to no structural or physical deficiencies other than appearance and the quantity of metal present in the yarn. But the tariff provision does not mention appearance and does not require a minimum metal content. Boiled down to its essentials, the argument in the proposed revocation is that the subject yarn does not look like the yarns previously classified in HTS subheading 5605.60, contains less metal and the metal is in a different form than those yarns. But as noted, these differences are insignificant when one looks at the tariff provision in question.

The proposed revocation points out that yarns made from natural fibers may contain trace amounts of metals and raises a concern that these yarns would have to be classified as metalized yarn. This concern is misplaced since it is obvious that to be classified as a metalized yarn the metal must be introduced in the manufacturing process.

The subject yarn resembles the metallic or metalized yarns that have been classified routinely in HTS subheading 5605.00; they are yarns to which metal has been added and where metal exists as a consistent element of the yarn. They properly are classified in HTS subheading 5605.90.

Finally we address what appear to be irregularities in the revocation process.

The CBP official who issued the ruling proposed for revocation is the National Import Specialist ("NIS") who bears the primary responsibility for the tariff classification of yarns. Presumably, the decision to classify the Best Key yarns in HTS

subheading 5605.00 was based on that officer's experience, expertise and knowledge of the industry. It is striking, assuming the information in Best Key's comments are accurate, that the yarn NIS was excluded from the deliberations surrounding what appears to have been a somewhat irregular report of the Customs Laboratory issued in connection with NY N196161 (April 13, 2012). That ruling classified a knit garment made with the subject yarn in HTS subheading 6110.30.30 and in so doing deliberately ignored NY N187601. It is not unfair to characterize this as having the potential of tainting the revocation process.

* * *

The proposed revocation must be abandoned. It relies in part on an FTC definition that was promulgated in 1959. Further, more current industry definitions recognize the subject yarn as being metalized. The proposed revocation ignores that the subject yarn satisfies the basic requirements of subheading 5605.00 and focuses instead on what are superficial differences. At a minimum the process must be suspended until the irregularities noted by Best Key in its comments are examined to ensure that they have not compromised the ruling process.

Respectfully submitted,

McGUIREWOODS LLP

John B. Pellegrini

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THE NATIONAL ARCHIVES
LITTERA SCRIPTA MANET
# FEDERAL REGISTER
OF THE UNITED STATES 1934

VOLUME 24 NUMBER 107

*Washington, Tuesday, June 2, 1959*

# Title 3—THE PRESIDENT

## Executive Order 10824

### DESIGNATING THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AS AN AGENCY TO HAVE CERTAIN CONTRACTUAL AUTHORITY UNDER THE ASSIGNMENT OF CLAIMS ACT OF 1940, AS AMENDED

WHEREAS the Assignment of Claims Act of 1940, 54 Stat. 1029, as amended by the act of May 15, 1951, 65 Stat. 41 (31 U.S.C. 203), contains the following provisions:

Any contract of the Department of Defense, the General Services Administration, the Atomic Energy Commission, or any other department or agency of the United States designated by the President, except any such contract under which full payment has been made, may, in time of war or national emergency proclaimed by the President (including the national emergency proclaimed December 16, 1950) or by Act or joint resolution of the Congress and until such war or national emergency has been terminated in such manner, provide or be amended without consideration to provide that payments to be made to the assignee of any moneys due or to become due under such contract shall not be subject to reduction or set-off, and if such provision or one to the same general effect has been at any time heretofore or is hereafter included or inserted in any such contract, payments to be made thereafter to an assignee of any moneys due or to become due under such contract, whether during or after such war or emergency, shall not be subject to reduction or set-off for any liability of any nature of the assignor to the United States or any department or agency thereof which arises independently of such contract, or hereafter for any liability of the assignor on account of (1) renegotiation under any renegotiation statute or under any statutory renegotiation article in the contract, (2) fines, (3) penalties (which term does not include amounts which may be collected or withheld from the assignor in accordance with or for failure to comply with the terms of the contract), or (4) taxes, social security contributions, or the withholding or nonwithholding of taxes or social security contributions, whether arising from or independently of such contract.

AND WHEREAS it appears that it would be in the public interest to make those provisions applicable to the National Aeronautics and Space Administration:

NOW, THEREFORE, by virtue of the authority vested in me by the above-quoted statutory provisions, I hereby designate the National Aeronautics and Space Administration as an agency of the United States to which such statutory provisions shall apply in the same manner and to the same extent that they apply to the Department of Defense, the General Services Administration, and the Atomic Energy Commission.

DWIGHT D. EISENHOWER

THE WHITE HOUSE,
*May 29, 1959.*

[F.R. Doc. 59-4628; Filed, June 1, 1959; 9:42 a.m.]

# Title 7—AGRICULTURE

## Chapter IX—Agricultural Marketing Service (Marketing Agreements and Orders), Department of Agriculture

[Lemon Reg. 795, Amdt. 1]

### PART 953—LEMONS GROWN IN CALIFORNIA AND ARIZONA

#### Limitation of Handling

*Findings.* 1. Pursuant to the marketing agreement, as amended, and Order No. 53, as amended (7 CFR Part 953), regulating the handling of lemons grown in California and Arizona, effective under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601 et seq.; 68 Stat. 906, 1047), and upon the basis of the recommendation and information submitted by the Lemon Administrative Committee, established under the said amended marketing agreement and order, and upon other available information, it is hereby found that the limitation of handling of such lemons as hereinafter provided will tend to effectuate the declared policy of the act.

2. It is hereby further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this amendment until 30 days after publication hereof in the FEDERAL REGISTER (60 Stat. 237; 5 U.S.C. 1001 et seq.) because the time intervening between the date when information upon which this amendment is based became available

(Continued on p. 4449)

## CONTENTS

### THE PRESIDENT

order, memorandum, list, or catalogue, which is issued to a purchaser, consignee, bailee, correspondent, agent, or any other person, in connection with the marketing or handling of any textile fiber product transported or delivered to such person.

(i) The term "outer coverings of furniture, mattresses, and box springs" means those coverings as are permanently incorporated in such articles.

(j) The term "wearing apparel" means any costume or article of clothing or covering for any part of the body worn or intended to be worn by individuals.

(k) The term "beddings" means sheets, covers, blankets, comforters, pillows, pillowcases, quilts, bedspreads, pads, and all other textile fiber products used or intended to be used on or about a bed or other place for reclining or sleeping but shall not include furniture, mattresses or box springs.

(l) The term "headwear" means any textile fiber product worn exclusively on or about the head or face by individuals.

(m) The term "backings," when applied to floor coverings, means that part of a floor covering to which the pile, face, or outer surface is woven, tufted, hooked, knitted, or otherwise attached, and which provides the structural base of the floor covering. The term "backing" shall also include fabrics attached to the structural base of the floor covering in such a way as to form a part of such structural base, but shall not include the pile, face, or outer surface of the floor covering or any part thereof.

(n) The term "elastic material" means a fabric composed of yarn consisting of an elastomer or a covered elastomer.

(o) The term "coated fabric" means any fabric which is coated, filled, impregnated, or laminated with a continuous-film-forming polymeric composition in such a manner that the weight added to the base fabric is at least 35 percent of the weight of the fabric before coating, filling, impregnation, or lamination.

(p) The term "upholstered product" means articles of furniture containing stuffing and shall include mattresses and box springs.

(q) The term "ornamentation" means any fibers or yarns imparting a visibly discernible pattern or design to a yarn or fabric.

(r) The term "fiber trademark" means a word or words used by a person to identify a particular fiber produced or sold by him and to distinguish it from fibers of the same generic class produced or sold by others. Such term shall not include any trade mark, product mark, house mark, trade name or other name which does not identify a particular fiber.

(s) The term "wool" means the fiber from the fleece of the sheep or lamb or hair of the Angora or Cashmere goat (and may include the so-called specialty fibers from the hair of the camel, alpaca, llama, and vicuna) which has never been reclaimed from any woven or felted wool product.

(t) The term "reprocessed wool" means the resulting fiber when wool has been woven or felted into a wool product which, without ever having been utilized in any way by the ultimate consumer, subsequently has been made into a fibrous state.

(u) The term "reused wool" means the resulting fiber when wool or reprocessed wool has been spun, woven, knitted or felted into a wool product which, after having been used in any way by the ultimate consumer, subsequently has been made into a fibrous state.

### § 303.2 General requirements.

(a) Each textile fiber product, except those exempted or excluded under section 12 of the Act, shall be labeled or invoiced in conformity with the requirements of the Act and regulations.

(b) Any advertising of textile fiber products subject to the Act shall be in conformity with the requirements of the Act and regulations.

(c) The requirements of the Act and regulations shall not be applicable to products required to be labeled under the Wool Products Labeling Act of 1939 (Public Law 76-850, 15 U.S.C. 68, 54 Stat. 1128).

(d) Any person marketing or handling textile fiber products who shall cause or direct a processor or finisher to label, invoice, or otherwise identify any textile fiber product with required information shall be responsible under the Act and regulations for any failure of compliance with the Act and regulations by reason of any statement or omission in such label, invoice, or other means of identification utilized in accordance with his direction: *Provided*, That nothing herein shall relieve the processor or finisher of any duty or liability to which he may be subject under the Act and regulations.

### § 303.3 Fibers present in amounts of 5 percent or less.

(a) In disclosing the constituent fibers in required information, no fiber present in the amount of five percentum or less of the total fiber weight shall be designated by its generic name or fiber trademark, but shall be designated as "other fiber".

(b) Where more than one of such fibers are present in a product, they shall be designated in the aggregate as "other fibers".

### § 303.4 English language requirement.

All required information shall be set out in the English language. If the required information appears in a language other than English, it also shall appear in the English language. The provisions of this section shall not apply to advertisements in foreign language newspapers or periodicals, but such advertising shall in all other respects comply with the Act and regulations.

### § 303.5 Abbreviations, ditto marks, and asterisks prohibited.

(a) In disclosing required information, words or terms shall not be designated by ditto marks or appear in footnotes referred to by asterisks or other symbols in required information, and shall not be abbreviated except as permitted in § 303.33(d).

(b) Where the generic name of a textile fiber is required to appear in immediate conjunction with a fiber trademark in advertising, labeling, or invoicing, a disclosure of the generic name by means of a footnote, to which reference is made by use of an asterisk or other symbol placed next to the fiber trademark, shall not be sufficient in itself to constitute compliance with the Act and regulations.

### § 303.6 Generic names of fibers to be used.

(a) Except where another name is permitted under the Act and regulations, the respective generic names of all fibers present in the amount of more than five percentum of the total fiber weight of the textile fiber product shall be used when naming fibers in the required information; as for example: "cotton," "rayon," "silk," "linen," "nylon," etc.

(b) Where a textile fiber product contains the hair or fiber of a fur-bearing animal present in the amount of more than five percent of the total fiber weight of the product, the name of the animal producing such fiber may be used in setting forth the required information, provided the name of such animal is used in conjunction with the words "fiber," "hair," or "blend;" as for example:

80% Rabbit Hair
20% Nylon
or
80% Silk
20% Mink Fiber

(c) The term "fur fiber" may be used to describe the hair or fur fiber or mixtures thereof of any animal or animals other than the sheep, lamb, Angora goat, Cashmere goat, camel, alpaca, llama or vicuna where such hair or fur fiber or mixture is present in the amount of more than five percent of the total fiber weight of the textile fiber product and no direct or indirect representations are made as to the animal or animals from which the fiber so designated was obtained; as for example:

60% Cotton
40% Fur Fiber
or
50% Nylon
30% Mink Hair
20% Fur Fiber

(d) Where textile fiber products subject to the Act contain (1) wool, (2) reprocessed wool, or (3) reused wool in amounts of more than five percent of the total fiber weight, such fibers shall be designated and disclosed as wool, reprocessed wool, or reused wool as the case may be.

### § 303.7 Generic names and definitions for manufactured fibers.

Pursuant to the provisions of section 7(c) of the Act, the following generic names for manufactured fibers, together with their respective definitions, are hereby established:

(a) *Acrylic*. A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed

of at least 85 percent by weight of acrylonitrile units (-$CH_2$-CH-).
|
CN

(b) *Modacrylic.* A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of less than 85 percent but at least 35 percent by weight of acrylonitrile units (-$CH_2$-CH-).
|
CN

(c) *Polyester.* A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85 percent by weight of an ester of a dihydric alcohol and terephthalic acid (p-HOOC-$C_6H_4$-COOH).

(d) *Rayon.* A manufactured fiber composed of regenerated cellulose, as well as manufactured fibers composed of regenerated cellulose in which substituents have replaced not more than 15 percent of the hydrogens of the hydroxyl groups.

(e) *Acetate.* A manufactured fiber in which the fiber-forming substance is cellulose acetate. Where not less than 92 percent of the hydroxyl groups are acetylated, the term triacetate may be used as a generic description of the fiber.

(f) *Saran.* A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 80 percent by weight of vinylidene chloride units (-$CH_2$-$CCl_2$-).

(g) *Azlon.* A manufactured fiber in which the fiber-forming substance is composed of any regenerated naturally occuring proteins.

(h) *Nytril.* A manufactured fiber containing at least 85 percent of a long chain polymer of vinylidene dinitrile (-$CH_2$-C(CN)$_2$-) where the vinylidene dinitrile content is no less than every other unit in the polymer chain.

(i) *Nylon.* A manufactured fiber in which the fiber-forming substance is any long chain synthetic polyamide having recurring amide groups (-C-NH-) as
||
O
an integral part of the polymer chain.

(j) *Rubber.* A manufactured fiber in which the fiber-forming substance is comprised of natural or synthetic rubber.

(k) *Spandex.* A manufactured fiber in which the fiber-forming substance is a long chain synthetic polymer comprised of at least 85 percent of a segmented polyurethane.

(l) *Vinyl.* A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 50 percent by weight of vinyl alcohol units (-$CH_2$?CHOH-), and in which the total of the vinyl alcohol units and any one or more of the various acetal units is at least 85 percent by weight of the fiber.

(m) *Olefin.* A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85 percent by weight of ethylene, propylene, or other olefin units.

(n) *Vinyon.* A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85 percent by weight of vinyl chloride units (-$CH_2$-CHCl-).

(o) *Metallic.* A manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal.

(p) *Glass.* A manufactured fiber in which the fiber-forming substance is glass.

§ 303.8 Procedure for establishing generic names for manufactured fibers.

(a) Prior to the marketing or handling of a manufactured fiber for which no generic name has been established by the Commission, the manufacturer or producer thereof shall file a written application with the Commission, requesting the establishment of a generic name for such fibers, stating therein:

(1) The reasons why the applicant's fiber should not be identified by one of the generic names established by the Commission in § 303.7;

(2) The chemical composition of the fiber, including the fiber-forming substances and respective percentages thereof, together with samples of the fiber;

(3) Suggested names for consideration as generic, together with a proposed definition for the fiber;

(4) Any other information deemed by the applicant to be pertinent to the application, including technical data in the form of test methods;

(5) The earliest date on which the application proposes to market or handle the fiber in commerce for other than developmental or testing purposes.

(b) Upon receipt of the application, the Commission will, within sixty (60) days, either deny the application or assign to the fiber a numerical or alphabetical symbol for temporary use during further consideration of such application.

(c) After taking the necessary procedure in consideration of this application, the Commission in due course shall establish a generic name or advise the applicant of its refusal to grant the application and designate the proper existing generic name for the fiber.

§ 303.9 Use of fur-bearing animal names and symbols prohibited.

(a) The advertising or the labeling of a textile fiber product shall not contain any names, words, depictions, descriptive matter, or other symbols which connote or signify a fur-bearing animal, unless such product or the part thereof in connection with which the names, words, depictions, descriptive matter, or other symbols are used is a fur product within the meaning of the Fur Products Labeling Act.

(b) Subject to the provisions of paragraph (a) of this section and § 303.6, a textile fiber product shall not be described or referred to in any manner in an advertisement or label with:

(1) The name or part of the name of a fur-bearing animal, whether as a single word or a combination word, or any coined word which is phonetically similar to a fur-bearing animal name, or which is only a slight variation in spelling of a fur-bearing animal name or part of the name. As for example, such terms as "Ermine," "Mink," "Persian," "Broadtail," "Beaverton," "Marmink," "Sablelon," "Lam," "Pershian," "Minx," or similar terms shall not be used.

(2) Any word or name symbolic of a fur-bearing animal by reason of conventional usage or by reason of its close relationship with fur-bearing animals. As for example, such terms as "guard-hair," "underfur," and "mutation," or similar terms, shall not be used.

(c) Nothing contained herein shall prevent the nondeceptive use of animal names or symbols in referring to a textile fiber product where the fur of such animal is not commonly or commercially used in fur products, as that term is defined in the Fur Products Labeling Act; as for example: "kitten soft," "Bear Brand," etc.

§ 303.10 Fiber content of elastic yarn or material.

(a) Where a textile fiber product is made wholly of elastic yarn or material, with minor parts of rigid material for structural purposes, it shall be identified as to the percentage of the elastomer, together with the percentage of all textile coverings of the elastomer and all other yarns or materials used therein.

(b) Where a textile fiber product is made in part of elastic material and in part of other fabric, the fiber content of such fabric shall be set forth sectionally by percentages as in the case of other fabrics. In such cases the elastic material may be disclosed by describing the material as elastic followed by a listing in order of predominance by weight of the fibers used in such elastic, including the elastomer, where such fibers are present by five percentum or more. An example of labeling under this paragraph is:

Front and back rigid sections:
50% Acetate,
50% Cotton.
Elastic: Rayon, cotton, nylon, rubber.

§ 303.11 Floor coverings containing backings, fillings, and paddings.

In disclosing the required fiber content information as to floor coverings containing exempted backings, fillings, or paddings, the disclosure shall be made in such manner as to indicate that it relates only to the face, pile, or outer surface of the floor covering and not to the backing, filling, or padding. Examples of the form of marking these types of floor coverings as to fiber content are as follows:

100% Cotton Pile

Face—60% Rayon, 40% Cotton

Outer Surface—100% Wool

§ 303.12 Trimmings of household textile articles.

(a) Trimmings incorporated in articles of wearing apparel and other household textile articles may, among other forms of trim, include (1) rick-rack, tape, belting, binding, braid, labels (either required or non-required), collars, cuffs, wrist bands, leg bands, waist bands, gussets, gores, welts, and findings, including superimposed garters in hosiery, and elastic materials and threads inserted in or added to the basic product or garment in minor proportion for holding, reinforcing or similar structural

**DEPARTMENT OF HOMELAND SECURITY**
**UNITED STATES CUSTOMS AND BORDER PROTECTION**

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| **IN THE MATTER OF**<br>**THE PROPOSED REVOCATION OF**<br>**NEW YORK CUSTOMS RULING**<br>**N187601 OF OCTOBER 25, 2011** | : | **Office of Regulations and Rulings**<br>**Washington, D.C.** |

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**COMMENTS OF BEST KEY TEXTILES LTD.**
**<u>IN OPPOSITION TO REVOCATION OF RULING</u>**

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**May 20, 2013**

DEPARTMENT OF HOMELAND SECURITY
UNITED STATES CUSTOMS AND BORDER PROTECTION

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|---|---|
| IN THE MATTER OF<br>THE PROPOSED REVOCATION OF<br>NEW YORK CUSTOMS RULING<br>N187601 OF OCTOBER 25, 2011 | Office of Regulations and Rulings<br>Washington, D.C. |

**COMMENTS OF BEST KEY TEXTILES LTD.**
**IN OPPOSITION TO REVOCATION OF RULING**

## I. INTRODUCTION

This Memorandum of Points and Authorities is submitted on behalf of Best Key Textiles, Ltd., of Shenzhen, China, in opposition to United States Customs and Border Protection (CBP)'s proposed revocation of *New York Customs Ruling N187601 of October 25, 2011* [Exhibit A], which classified certain metalized yarns produced by Best Key under subheading 5605.00.9000 of the Harmonized Tariff Schedule of the United States (HTS). Notice of the proposed revocation was published in the April 24, 2013 edition of the *Customs Bulletin,* and is reproduced as Exhibit B to these comments. .

Any revocation of *New York Customs Ruling N187601* would be arbitrary, capricious, and not in accordance with law. As discussed in further detail below:

> *New York Customs Ruling N187601* is correct, both as a matter of fact, and a matter of law;

> Customs' proposed revocation is not in accordance with law,

since (1) an eo nomine provision covers all forms of the named article, (2) the tariff schedule is written for the future as well as the present, and (3) Customs may not, by a reference to so-called "common meaning" of the term "metalized yarn" limit the statute to forms of metalized yarn previously devised;

> Best Key metalized yarn is indeed "metalized yarn" within the common and commercial meaning of that term;

> Customs' proposed revocation is arbitrary, since it was ingeminated by members of Customs' National Import Specialist Staff for improper purposes, and furthered through the apparent falsification of Customs Laboratory reports.

For the reasons provided herein, Customs should withdraw its proposal to revoke *New York Customs Ruling N187601 of October 25, 2011.*

Customs' proposed revocation is unwarranted as a matter of fact, and incorrect as a matter of law. Best Key's metalized yarns, classified in *New York Customs Ruling N187601*, satisfy all statutory requirements for classification as a "metalized yarn". Although produced by a new and unique nanometal process, for which patent protection has been sought, Best Key's subject yarns are covered by the *eo nomine* provision for metalized yarns of HTS subheading 5605.00.9000. Absent contrary Congressional intent – not in evidence here – an *eo nomine* provision for article covers all forms of the article, whether or not known to commerce at the time the tariff was drafted. See, e.g., *Carl Zeiss, Inc. v. United States*, 195 F.3d 1375, 1379 (Fed. Cir. 1999). "An eo nomine designation, with no terms of limitation, will ordinarily include all forms of the named article." Id. (citation omitted). It is equally clear tariff schedules are written "not only for the present but also for the future, thereby embracing articles produced by technologies which may not have been employed or known to commerce at the time of the enactment." *Corporation Sublistatica, S.A. v. United States,*

1 CIT 120, 126, 511 F. Supp. 805, 809 (1981); See also *Davies Turner & Co. v. United States*, 45 CCPA 39, 41, C.A.D. 669 (1957).

That Best Key's metalized yarns contain metal introduced in the form of powder is undisputed, and conceded in Customs' proposed revocation notice. The classification of Best Key's metalized yarns therefore turns purely on issues of law – specifically, how HTS Heading 5605, including its references to "textile yarn, or strip or the like of heading 5404 or 5405" should be construed. For reasons discussed herein, Best Key submits that the reference is intended to show that certain yarns classified under HTS Heading 5605 must satisfy the dimensional and compositional limits set forth in Headings 5404 or 5405, and must contain metal "in any proportion" See EN to HTS Heading 56.05]. There is no reason to interpret the heading as requiring particular levels of metal content, to require the contained metal to perform certain functions, or to limit the methods in which a metalized yarn may be produced.

## II. DESCRIPTION OF THE MERCHANDISE

Best Key's metalized yarns, which are the subject of *New York Customs Ruling N187601*, are polyester[1] yarns which have been combined with 40 nanometer aluminum or zinc nanometal powders. Nanometal powders (i.e., pure metals in small particle sizes) impart anti-bacterial, anti-microbial and other useful properties to yarns and fabrics. As discussed in more detail herein, certain nanometals (particularly silver and, to a lesser extent, zinc and aluminum) impart anti-microbial properties. Zinc nanometals can be used to increase a yarn or textile's ability to shade from

[1] Best Key has also produced metalized rayon yarns by a similar process.

ultraviolet rays along the electromagnetic spectrum.

While some metalized yarns are produced by laminating threads with a metalized film (a product known commonly and commercially as "Lurex", or by spray coating textile yarns with metallic powders, Best Key's process takes advantage of the development of metal nanopowders, and allows the metal powders to be distributed throughout the mass of the yarn itself, increasing the longevity of the yarn's metallizing elements.

The Best Key process introduces the metal to the polyester material during the yarn production stage.

The production of Best Key's metalized polyester yarns begins with the drawing of polyester yarn. Polyester is made by isolating ethylene derived from petroleum refining to yield ethylene glycol. Dimethyl terephthalate is then reacted with the ethylene glycol in the presence of a catalyst, producing an isolated monomer. The monomer is then combined with terephthalic acid and heated to a temperature of 472°F (280°C). This produces clear molten polyester (a repeating molecule, or polymer), which is extruded through a slot to form long ribbons of polyester.

The extruded polyester ribbons are then cooled and broken up into chips of homogeneous size.

To produce polyester yarn, the chips are melted at temperatures exceeding 500°F, to form a liquid solution. At this point in Best Key's process, aluminum, zinc or other nanometal in powder form is added to the polyester slurry, and titanium dioxide is added as a delusterant. The polymer mixture is then forced through a spinneret, which yield yarns of specified denier (thickness). The denier of the yarn is determined by the diameter of the spinneret. This process produces a soft polyester yarn which is then stretched, forcing the polyester molecules to align in parallel formation.

The yarn is stretched to approximately five (5) times its original length, which increases is strength, tenacity and resilience.

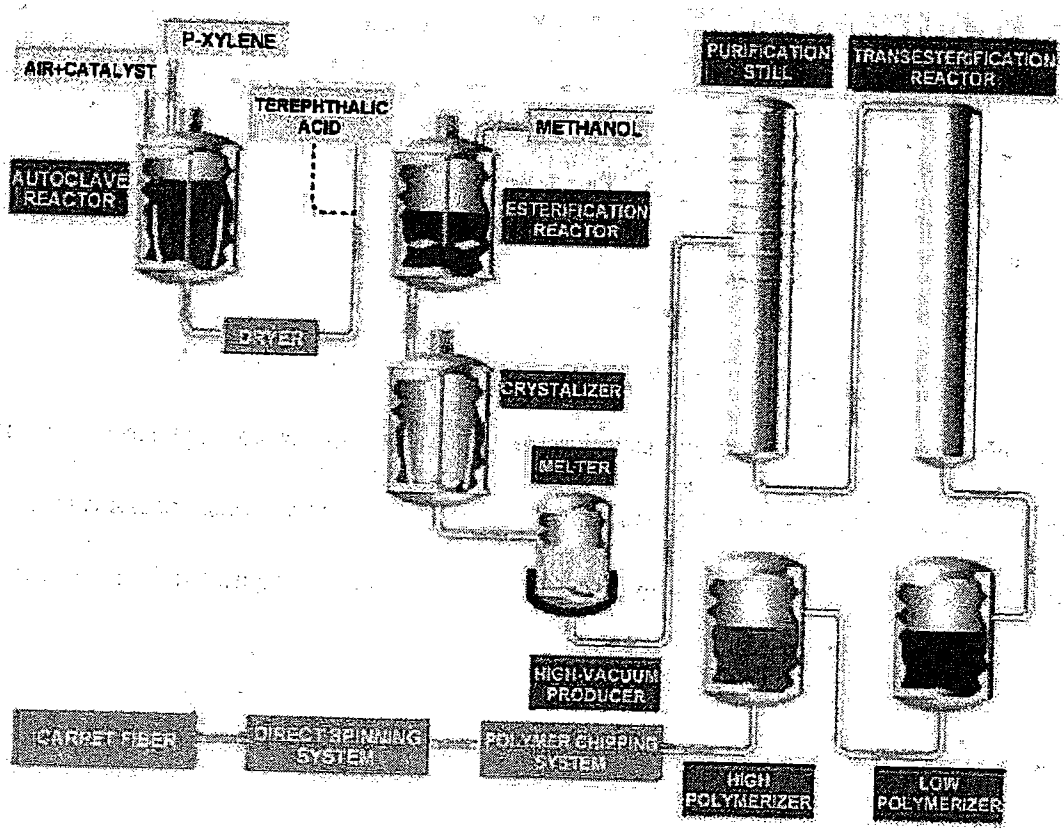


Fig. 1. Polyester yarn production process.

The use of the spinneret to distribute the nanometal throughout the polyester yarn is similar to the nano-textile production method known as "Electrospinning". See Soutter, Nanotechnology in

Textiles, available at http://www.azonano.com/article.aspx?ArticleID=3058#2 (last visited May 13, 2013). Soutter describes "electrospinning" as follows:

> This is a well established technique for manufacturing polyester fibers. The apparatus consists of a syringe with a capillary needle. A high voltage across the needle creates a charged jet of material which spins out into fibers to be collected on a charged plate.

Other than the use of a charged plate to collect fibers, Best Key's process is similar, in that powder in the spinneret, mixed with the plastic material to make the polyester, is ejected from the spinneret in a "jet of material" which is stretched and cooled to make a metalized polyester fiber.

At the time it applied for *New York Customs Ruling N187601*[2], Best Key was producing two principal metalized yarn products. The first was an **80 denier polyester yarn containing 1900 ppm of aluminum**. Scientific examination indicates that the aluminum metal is distributed through the matrix (structure) of the yarn [See Exhibit D]. An energy dispersive x-ray taken by the independent laboratory Vartest shows clearly the presence of titanium, zinc and aluminum in the yarn. The yarn has no significant antistatic characteristics and has less than 1 turn per inch. The total presence of metal in the yarn (aluminum, titanium[3], trace zinc) accounts for about 0.70% of the total yarn weight. See Exhibit D.

The second product was a **79.6 denier polyester yarn containing 2800 ppm of zinc.** The zinc is distributed evenly throughout the polyester matrix. The total presence of metal in the yarn (zinc, titanium, trace aluminum) is 0.74% by weight. The metal is clearly identifiable through an

[2] A copy of the ruling request is appended at Exhibit C hereto.

[3] Titanium metal in these yarns is present in minute quantities, and derives from the titanium dioxide delusterant used.

energy dispersive x-ray examination, as detailed in the Vartest report shown in Exhibit E hereto.

The issue presented is whether these yarns are properly classifiable as "metalized yarns" of HTS subheading 5605.00.9000, as held in *New York Customs Ruling N187601*. As noted above, there is no question that all of the yarns include metal, introduced in the form of powder, and that the metal was deliberately introduced. Moreover, the metal remains identifiable in the yarn.

For the reasons set out herein. Best Key submits that *New York Customs Ruling N187601* correctly classifies these yarns, and that the proposed revocation of that ruling is arbitrary, capricious and contrary to law.

## III. RELEVANT STATUTORY PROVISIONS

Harmonized Tariff Schedule (HTS)(2012) Heading 5605 provides for:

| | |
|---|---|
| **5605.00** | Metalized yarn, whether or not gimped, **being textile yarn, or strip or the like of Heading 5404 or 5405**, combined with metal in the form of thread, strip or powder or covered with metal: |
| 5605.00.10 | Metal coated or metal laminated man-made filament or strip or the like, ungimped and untwisted or with twists of less than 5 turns per meter[4] |
| 5605.00.90 | Other |

HTS Headings 5404 and 5405, referenced in the heading, provide respectively for:

| | |
|---|---|
| 5404 | Synthetic monofilament of 67 decitex or more and of which no cross-sectional dimension exceeds 1 mm; strip and the like (for example, artificial straw) of synthetic textile materials of an apparent width not exceeding 5 mm: |
| 5405 | - Artificial monofilament of 67 decitex or more and of which no cross-sectional dimension exceeds 1 mm; strip and the like (for example, artificial straw) of artificial textile materials of an apparent width not exceeding 5 mm. |

[4] This heading cannot apply to Best Key's product, since it requires goods to be "coated" or "laminated" with metal.

## IV. ANALYSIS

### 1. Metalized Yarns Are Made By Several Different Processes

HTS Heading 5605 provides for Metalized yarns "being textile yarn, or strip or the like of Heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal". In this regard, Heading 5605 sets out some fairly demanding requirements which the Best Key metalized yarns satisfy. Specifically:

> They must be in the form of "textile yarn or strip or the like of headings 5404 and 5405";

> They must be goods which, save for their metal content, would fall to be classified as textile yarns, or in HTS headings 5404 or 5405)(providing, respectively, for "synthetic" and "artificial" monofilaments of 67 decitex or more); and

> The metal must have been combined to the yarn in one of the forms specified in the heading (i.e., "thread, strip or powder)".

Initially, we stress that Best Key metalized yarns which were the subject of *New York Customs Ruling N187601* meet all of these requirements. They are yarns of a kind specified in Heading 5605 and the metal was combined with the yarn in the form of power. Best Key's yarns thus *prima facie* qualify for classification in Heading 5605, as Customs correctly held in 2011.

The way in which metalized yarns are manufactured, and the purposes for which they are used, have evolved over time. The use of metalized yarns dates back to ancient times, where they were used in the raiment of kings, nobles and persons of status. Historically, the yarn was made by wrapping a metal thread around a textile thread core (often silk), leaving the core partly visible to

enhance the visual appeal of the product. Ancient textiles partially or wholly woven from gold threads were known historically as "*Cloth of Gold*"[5]. References are found on the headstones of Roman noblewomen, and in the Bible [*Psalms* 45:14].

In England, King Henry VII limited the wearing of cloth with gold or metal thread to royalty and high nobility.[6] Gold file' threads were used in numerous garments, and later, lame' fibers would be developed. More recently, new manufacturing methods have allowed for the drawing of metal threads, which are then woven or gimped with textile yarns, the application of metallic powders to the surface of a textile yarn, direct bonding of metal powder to fibers, and, as noted above, in more recent times, through the addition of nanometal particles to a molten plastic or cellulose product, prior to spin-drawing. During the past half century, the predominant metalized yarn used in fashion garments has been "lurex" a product made by bonding fine metal powder between two sheets of transparent or translucent film, and then slitting the film "sandwich" to fiber widths[7].

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[5] In ancient Greek mythology, the "Golden Fleece" pursued by Jason and the Argonauts was believed by numerous scholars to be a reference to a metal woven garment, effectively a metaphor for royal power. See, e.g., David Braund, *Georgia in Antiquity:* Oxford: Clarendon Press (1994).

[6] See Maria Heyward: *Rich Appeal: Clothing and the Law in Henry VIII's England* (Ashgate Publishing, 2009).

[7] Some, by not all types of lurex yarns have a visual characteristic. However, these visual characteristics are typically not imparted by the metal dust used in their manufacture, but from treatments to the plastic laminates used in their production. Thus, the website of Lurex Co., Ltd., the manufacturer of the yarn, indicates that the visual properties of many of their products result from devising laminates which "accept dyes to give sparkle effects, laminated film to give irridescent effects, chemically treated laminates which absorb light to give glow-in-the-dark effects; retro-reflective yarns for sportswear, colour change effects under UV lights and matte antique types."http://www.lurex.com/companyprofile.html (last visited May 19, 2013). The stiffness characteristic of lurex is viewed as a drawback to the use of lurex, and production

Metalized yarns have antibacterial and antimicrobial properties, and are used for a variety of decorative and utilitarian purposes. As noted by one industry source:

> Metalized Yarns – These yarns are either yarn made from thinly drawn metals (gold, silver, nitinol, stainless steel, nickel, etc.) flexible enough to be woven, or yarns that have been metalized through the bonding of a metal to the yarn. Typical examples of metalized yarns are Silver (X- static fiber) or Copper, etc. bonded to nylon. The DuPont Company manufactures a metal clad fiber called Aracon fiber, in which a metal is directly bonded to an aramide fiber. Typical uses for metalized yarns include antimicrobial, static dissipation, shielding from electromagnetic force (EMF), shielding from radiation, shape retention and conductivity.

See Bally Ribbon Mills, *Performance Properties of the Most Frequently Utilized Fibers and Yarns* [copy appended at Exhibit F]. Modern metalized yarns were largely developed to replace some of the metal threads used to make old-style lame′ fabrics, which were subject to yarn and seam slippage.

In the 20th Century, developments in the science of combining yarns with metal continued. A succinct summary of the history of metalized yarn production during the 20th century was provided in *Metal Film Company Inc. v. Metlon Corporation*, 316 F. Supp 96 (S.D.N.Y. 1970), where the Court noted:

> Walter George Scharf went to work in 1916 at the age of seventeen as a gold beater upon the death of his father. Despite the lack of a formal education, he developed exceptional sales, management and technical expertise and was able to make major improvements in gold leafing processing equipment. He remained in this business for over forty years. In 1950 he became interested in metallizing. He started a company called the High Vacuum Metal Company, through which he marketed a yarn composed of metalized Mylar laminated to butyrate. The resultant yarn was used for such products as upholstery in automotive and plane interiors. Perceiving the need for a softer

---

efforts have focused on ways to obtain or use new polyester films to soften the fabric. Thus, the Lurex Company Ltd.'s website indicates that development is being conducted on "the new 6-micron film which, for the first time has given Lurex® a name for ultra softness". *Id.*

material, however, Scharf developed a new laminated metalized Mylar yarn, and formed a company, Metal Film Company, the plaintiff herein, to develop, manufacture and market this yarn. The resultant yarn was a commercial success in its field, but it was still not soft enough a material for use in fabrics that would come in contact with a wearer's skin.

They key was to produce a metalized yarn soft enough to be worn against skin, but strong enough to withstand the various stresses that fabrics are exposed to during the lifetime of a garment or other textile article. As the Court explained:

> Metalized yarns are subjected to still further mechanical and chemical stresses during the lifetimes of the garments or other products, for example, the stresses arising during wearing and during dry cleaning or laundering operations. For a metalized yarn to be useful it must be able to withstand the various chemical and mechanical attacks to which it will be subjected over the life of the product.
>
> Scharf turned to the task of developing such a softer yarn, and came up with a non-laminated metalized yarn, and on June 18, 1956 filed a patent application based on this product.

Metalized yarns are a relatively recent development, the *Metal Film Company* court noted, indicating that periodic improvements had been made in producing such yarns:

> [M]odern metallic yarns were introduced commercially in about 1946 and represented a considerable improvement over the previously available yarns, e.g., the so-called Lame yarns that had been used for many years. **The first important development among the modern yarns was a three-ply structure in which a central layer of aluminum foil was sandwiched between two layers of clear plastic film. The layers were glued together with an adhesive.** The three-ply foil yarn is shown in U.S. patent No. 2,129,504 to Karl E. Prindle, which issued in 1938 to Dow's predecessor, The Dobeckmun Company.
>
> The use of three-ply aluminum foil yarn was limited because fabrics woven or knitted from it were rough. Nevertheless, substantial quantities of three-ply aluminum foil yarns were sold and it is only

> within the last few years (since about 1963) that this type of yarn has declined to an insignificant factor in the metallic yarn market.
>
> *  *  *
>
> **The second important modern development in metallic yarns was the introduction of "laminated" metalized yarn in about 1955.** Laminated metalized yarn is made by vacuum metallizing the surface of a polyester plastic film and then adhesively bonding another layer of polyester film to the metalized surface to protect that surface.
>
> *  *  *
>
> The invention of **non-laminated metalized yarn**, which is the subject of this suit, was the **third important development in metallic yarns.** The term "non-laminated" is used because this yarn has only one thickness of Mylar (or other substrate), rather than the three thicknesses of the foil yarns and the two (or more) thicknesses of the laminated metalized yarns, and because it does not need the laminating adhesive required by these two earlier types of yarn.

316 F. Supp. At 98-99 [emphasis added; citations omitted]. As the Court's decision indicates, while laminated "Lurex" yarns (which are still used extensively today in the production of sweaters and other apparel articles) are perhaps the principal metalized yarn in fashion use today, by 1970 they had been eclipsed by new, non-laminate methods for making metalized yarns which used a vacuum-deposition process, rather than adhesive films, to capture metal dust or powder in a textile yarn.

Subsequent developments in the production of metalized yarn have included such things as the creation of DuPont's Aracon fiber, a metalized fiber produced by cladding the company's Kevlar non-woven fibers with metallic substances (nickel, copper and silver in varying amounts). Aracon is widely used as a dielectric and cladding product for coaxial and other electrically conductive wires and cables. See http://araconfiber.com/fiber/. [Last visited May 13, 2014].

Customs' rulings have most commonly dealt with "Lurex" yarns, often used in sweaters and other garments. In the Lurex process, metal in fine powder form is deposited by vacuum deposition on a plastic film. The film, at the time of combining with the metal, is not a textile fiber. However, after the deposition process occurs, the film is slit to form polyester fibers coated with metal. Customs has regularly recognized "Lurex" as being a metalized yarn. See, e.g., *New York Customs Ruling N190399 of February 3, 2012; New York Customs Ruling N200561 of January 27, 2012; New York Customs Ruling N006878 of April 17, 2007; New York Customs Ruling M81880 of April 26, 2006.* [These rulings demonstrate that there is no requirement for a non-metalized textile yarn to exist as such prior to the combination with metal; in the Lurex process, there is no textile material present until the very last step of the production process, when the plastic/metal film composite is slit to a textile width (<5mm)].

More recently, the development of nanometal powders has revolutionized the textile fiber industry, since nanopowders allow metal content to be introduced to textile materials in ways not previously possible. It allows, for example, the electrospinning process described above, and permits Best Key to force polyester and rayon slurries containing metal particles through spinnerets. As explained in a recent technical publication:

> Research is going on around the world to explore the application of nano-materials, nano-finishing, nano-coating, nanofibres etc. to develop innovative new products with significantly improved performance properties and functionality of textile fibers and fabrics. Nowadays nanometals are finding most of the application in the finishing department. They are being used in UV-protection, water repellency, antibacterial activity, antistatic performance, EMI shielding, wrinkle resistance, stain resistance performance, battle dress formation etc., Nano sized materials are able to enhance the physical properties of conventional textiles. In future, the application

of these wonder nano-particles can be extended to produce textiles with health care & self-cleaning function

SS. Chinchwade and Maneet Srivastava, Application of Nanometals in Textiles, Part 1 , Textile Review Magazine, (April 2012), reprinted at www.technicaltextile.net [Last visited May 13, 2013]. This article is appended as Exhibit G hereto.

As noted in Exhibit G, the application of metal nano-particles in textile fiber production is extensive and significant. This is not a situation where "more is better" (in terms of the application of metals), since, as the authors note, "Conventional material have grain sizes ranging from microns to several millimeters and contain several billion atoms each, [while] nanometer sized grains contain only about 900 atoms, exhibit new and improved properties compared to corresponding bulk materials.[8] Functions being performed by nano-particles include anti-bacterial finishing, ultraviolet radiation shielding, self-cleaning fabric development, odor reduction, anti–pollen activity, flame retardant qualities, making functional finishes wrinkle, stain and static resistant, protection against biological and chemical threats, creation of "smart, comfort and medical textiles" and the like. See Exhibit G, p. 4.

Customs' proposed revocation of *New York Customs Ruling N187601* proceeds significantly on the assumption that Best Key's product is not within the "common meaning" of the term "metalized yarn" as used in HTS Heading 5605, and does not have an "essential resemblance" to goods which Customs has traditionally classified in that heading. However, while nanometals may

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[8] The article notes several materials, including elemental metals, compounds and polymers, which could be introduced into textiles as nano-particles. For purposes of these comments, Best Key submits that only elemental metal particles would cause a textile fiber to be classified as a "metalized yarn" of HTS Heading 5605.

not have been known in the 1970s/1980s, when the *Explanatory Notes* to the HTS were drafted, they are certainly known now, and are a commercially and commonly known commodity.

The Explanatory Notes to HTS Heading 5605, prepared by the Brussels-based World Customs Organization (WCO), provide several examples of metalized yarns, and describe some of the various methods by which such yarns are produced. The ENs . . . "are not legally binding, H.R. Conf. Rep. No. 100-576, 100th Cong., 2d Sess. 549 (1988), reprinted in 1988 U.S.C.C.A.N. 1547, 1582, but do "clarify the scope of the HTSUS subheadings and offer guidance in their interpretation." *Franklin v. United States*, 289 F.3d 753, 758 (Fed. Cir. 2002). The ENs, prepared during the 1980s, reflect some of the methods for producing metalized yarns known at that time. They indicate that the Heading *includes, inter alia*:

> (1) Yarn consisting of any textile material (including monofilament, strip and the like and paper yarn), **combined with metal thread or strip**, whether obtained by a process of twisting, cabling or by gimping, whatever the proportion of the metal present.
>
> (2) Yarns of any textile material (including monofilament, strip and the like and paper yarn) **covered with metal by any other process**. [Emphasis added]

Providing another exemplar of goods covered by Heading 5605 of the tariff, the EN also indicates that:

> The Heading also features products consisting of a core of metal foil (generally of aluminum) or of a core of plaster film coated with metal dust, sandwiched by means of an adhesive between the two layers of plastic film[9].

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[9] This will of course be recognizable as the first generation process described in the *Metal Films* case, supra, one which was subsequently replaced by the use of vacuum deposition of metal particles on a plastic substrate. .

The manufacturing techniques described in the ENs are recognizable as those discussed in the *Metal Films v. Metlon* decision, supra. However, the Explanatory Notes only set out *exemplars* of the type of goods which have been considered to constitute "metalized yarns". It is neither an exhaustive or preclusive listing of goods covered by the heading. *See Rubie's Costume Co. V. United States*, 337 F.3d 1350, 1359 (Fed. Cir. 2003) ("Absent a clearer showing of congressional intent, we refuse to import incidental characteristics of the examples in the Explanatory Notes into the headings of the HTSUS.").

The Courts have warned against reading examples in the *Explanatory Notes* as limiting the scope of the actual tariff heading. For example, in *Midwest of Cannon Falls Inc. v. United States*, 122 F. 2d 1423 (Fed. Cir. 1997), the government argued that a provision for "Christmas ornaments" in the tariff should be interpreted as referring to "**hanging** Christmas ornaments", and supported its position with examples from the *Explanatory Notes*. However, the Federal Circuit made clear that the language of the tariff itself was paramount, and that limitations on it would not be inferred from examples given in the Notes:

> The government appears to argue in the alternative that the term Christmas ornament is indeed broader and includes "hanging" ornaments other than Christmas tree ornaments - but is still limited only to Christmas ornaments that are hung from archways, doorways, ceilings, fixtures, window shades, and so forth during the Christmas season. Hence, the government argues that because the imported items at issue are not meant to be hung, they cannot be Christmas ornaments. In support of this argument, the government primarily relies on the examples in the Explanatory Notes to heading 9505, most of which hang from a tree or elsewhere. The examples in the Explanatory Notes, however, cannot control here, particularly in light of the congressional omission of the word "tree." **Absent a clearer showing of congressional intent, we refuse to import incidental characteristics of the examples in the Explanatory Notes into the** headings **of the HTSUS.** See *Marubeni Am. Corp. v. United States*,

35 F.3d 530, 535 n.3 (Fed. Cir. 1994) ("Explanatory Notes are only instructive and are not dispositive or binding.").

In this case, the *Explanatory Notes* describe various methods for producing metalized yarns, but do not purport to give a comprehensive listing of all products covered by the heading, or of the methods by which such goods can be manufactured. Understandably, the *Explanatory Notes* make reference to those technologies for producing metalized yarn known at the time of their drafting. However, they put no limitations on the methods by which a "metalized yarn" of Heading 5605 may be produced.

Attached at Exhibit H is the *Affirmation of Professor Ingrid Johnson*, the Assistant Chairperson in the Textile Development & Marketing Department and Acting Associate Chairperson in the Home Products Department at the Fashion Institute of Technology (FIT) in New York City. Professor Johnson is also an editor of the authoritative *Fairchild's Dictionary of Fashion*, whose 7th Edition is forthcoming. As noted in her Affirmation, metalized yarns such as those produced by Best Key, in which metal nanopowders are bonded to synthetic fibers in the manufacturing or finishing process, are well known in United States commerce and industry. She not only offers her expert opinion that Best Key's metalized yarns are within the definition of the term "metalized yarns", but also indicates that the forthcoming edition of Fairchild's, which has repeatedly been found influential by the United States Court of International Trade, will reflect broader definition of the term "metalized yarns" to more accurately reflect the multiplicity of methods in which such yarns may be manufactured.

## 2. An Eo Nomine Provision of the Tariff Covers All Forms of the Named Article

HTS Heading 5605 is an *eo nomine* provision of the tariff, that is, one which covers an article by name. It covers all "Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of Heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal". The products covered by *New York Customs Ruling N187601* clearly are textile yarns which have been "combined with metal in the form of . . . powder[10]". They fall expressly within the language of the heading.

While the powder is added to the instant yarns in the polyester matrix, rather than being applied through a process of spray-coating or vacuum deposition, this is of no moment under the language of the tariff. The tariff only specifies the forms in which the metal is to be combined with yarn ("thread, strip or powder or covered with metal"), and not the process by which combination occurs. The Best Key process, by distributing the metal throughout the mass of the yarn, helps protect the metal from being depleted from the yarn during use. As noted in the *Metal Film Company Inc. v. Metlon Corporation* decision, supra, "Metalized yarns are subjected to still further mechanical and chemical stresses during the lifetimes of the garments or other products, for example, the stresses arising during wearing and during dry cleaning or laundering operations. For a metalized yarn to be useful it must be able to withstand the various chemical and mechanical attacks to which it will be subjected over the life of the product." Where metal powders are applied to a yarn by a process of coating or vacuum deposition, the metal is all on the exposed surface area of the yarn,

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[10] Since Best Key's nanopowders clearly meet the HTS' definition of "powder", as set out in Note 8(b) to HTS Section XVI, their status as such is beyond question.

immediately subject to abrasion and to removal by chemical or mechanical stresses. In the Best Key process, however, the metal is uniformly dispersed through the fiber matrix, allowing for greater durability and greater resistance to mechanical and chemical stresses. The process represents an improved method for creating a metalized yarn in which the textile (polyester) component is combined with metal powder.

Customs rulings have confirmed that "a yarn that contains **any amount of metal** is considered in its entirety as a "metalized yarn" for tariff purposes". See, e.g., *New York Customs Ruling J82790 of April 3, 2003*. In determine whether a yarn is a "metalized" yarn, Customs does not consider the weight of the metal, but whether the yarn contains *any* metal. See, e.g., *New York Customs Ruling L86561 of August 8, 2005; New York Customs Ruling N034758 of August 15, 2008; New York Customs Ruling F83891 of March 7, 2000.*

As the *Explanatory Notes* indicate, Heading 5605 covers yarns combined with metal, "whatever the proportion of the metal present". The verb "combine" is defined as:

> To bring into a state of unity; merge. To join (two or more substances) to make a single substance, such as a chemical compound; mix.

See *The Free Dictionary.com.* It also means:

> 1.a To bring into such close relationship as to obscure individual characters.

*The Merriam-Webster Dictionary*

As Customs correctly recognized in *New York Customs Ruling N187601 of October 25, 2011,* the Best Key yarns in question are textile yarns which have been "combined" with metal powder. The yarns thus, *prima facie* qualify as metalized yarns of Heading 5605.

*Eo nomine* provisions of the tariff cover all forms of the named article, including new forms not known to science or commerce at the time the tariff schedules were drafted or adopted. As noted in *Borneo Sumatra Trading Co. Inc. v. United States*, 311 F. Supp. 326, 338-39 (Cust Ct 1970), tariff acts are written for the future as well as for the present, and encompass new forms of articles. See also *NEC America Inc. v. United States*, 8 CIT 184, 186, 596 F. Supp. 466, 468 (1984), *aff'd*, 760 F.2d 1295 (Fed. Cir.1985). Absent demonstrated intent to the contrary, an eo nomine provision includes all forms of the named article. See *NEC America, supra*; see also *Avecia, Inc. v. United States*, 30 CIT 1956, 1971, 469 F. Supp. 2d 1269, 1283 (2006). Customs has noted, that, in the absence of this rule, newly-developed versions of articles named in the tariff schedule would be classified in "basket" provisions of the tariff, rather than under provisions which expressly describe them. See, e.g., *Customs Headquarters Ruling 086626 of January 15, 1991; Customs Headquarters Ruling W967058 of April 21, 2006.*

Accordingly, Customs ruled correctly in *New York Customs Ruling N187601* when it stated that:

> . . . the aluminum or zinc powder is added to the slurry that is extruded to create the filaments. For tariff purposes, a yarn combined with metal in the form of powder is considered a metalized yarn.

HTS Heading 5605 imposes no limitations or conditions on the manufacturing method used to combine metal powder with a man-made fiber yarn. It is enough that metal is added in powder form and that the product, in its condition as imported, is a textile yarn, or a synthetic or artificial fiber strip or monofilament – condition which, Customs admits, are present here.

Classification of Best Key's yarns under HTS subheading 5605.00.9000 was correct, as a matter of law. The agency's proposed revocation of that ruling is not in accordance with law.

### 3. Best Key's Metalized Yarns Bear an "Essential Resemblance" to the Articles Described in HTS Heading 5605

Customs' proposed revocation of *New York Customs Ruling N187601* admits that the uniqueness of the Best Key process does not remove its metalized yarns from the scope of HTS Heading 5605. The agency questions, however, whether Best Key's product bears an "essential resemblance" to the articles described by the heading:

> CBP has held in the prior rulings that tariff terms are written for the future as well as the present, which means that tariff terms are expected to encompass merchandise not known to commerce at the time of their enactment, as long as the new article possesses an essential resemblance to the one named in the statute.

Customs then suggests that Best Key's metalized yarns do not bear an "essential resemblance" to the metalized yarns of Heading 5605. The agency's proposed revocation provides the following reasons:

> Best Key's metalized yarns do not comport to the "common and commercial" meaning of the concept "metallized fibers" as defined by agencies such as the Federal Trade Commission;

> Selected "technical sources on metalized yarn noted that metallic yarns consist of pre-existing yarn or plastic film bonded to metal";

> Best Key's competitors, represented by domestic organizations such as "American Fiber Manufacturers Association and the National Council of Textile

> Organizations were in agreement that the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn.:
>
> - Best Key's yarns look and feel like regular polyester yarns and do not have "a distinctive metallic appearance" which promotes its "popularity for decorative applications"; and
> - Adding metal for antistatic or other purposes before extrusion of yarn is not a new process; and
> - None of the exemplars in the Explanatory Notes to HTS Heading 5605 describe a product in which the metal is not "visually apparent".

None of these points have any legal or factual validity, and Best Key herein address them in turn.

**A. The "Essential Resemblance" Requirement**

As Customs noted in its proposed revocation notice, a tariff provision will encompass a future-developed version of a product if the product bears an "essential resemblance" to the goods (or, where applicable, exemplars) identified in the tariff heading. The "essential resemblance" test requires an inquiry into whether the new product satisfies the criteria for classification in the particular heading, whether the heading classifies *eo nomine* or by use.

Thus, in *United States v. Standard Surplus Sales Inc.*, 69 CCPA 34, 40 (1981), the Court of Appeals was called upon to determine whether certain backpacks, used in the sport of backpacking, fell within the definition of "luggage" as set out in the tariff. The court noted that:

> To be classified within a specific tariff provision, it would be sufficient if the new article possessed "an essential resemblance to the former [exemplars] in those particulars **which the statute established as the criteria of the classification.**"

citing *Klipstein v. United States*, 4 Ct. Cust. Appls 510, 514 T.D. 33936 (1913). Similarly, in *United States v. Texas Instruments, Inc.*, 67 CCPA 59, 620 F.2d 269 (1981), the Court of Appeals ruled that an integrated circuit used to manufacture electronic watches did not have an "essential resemblance" to "watch movements" as provided in the tariff. The court noted that "the required essential resemblance is to those characteristic established by the [tariff schedule] as **the criteria of classification**", citing *Davies, Turner & Co. v. United States*, 45 CCPA 39, 41-42 (1957). While the meaning of individual words is as they were understood at the time of tariff enactment, *id.*, the tariff provision under consideration fairly embraces all future-developed goods which meet its terms[11].

Thus, the "essential resemblance" test on which Customs relies for its proposed revocation begins and ends with the language of the tariff itself.

HTS subheading 5605.90, under which Customs correctly classified Best Key's products in New York Customs Ruling N187601, provides for:

> 5605 Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of Heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal . . . .

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[11] Where the tariff provision in question is one which classifies by use, the "essential resemblance" test is determined by whether the later-developed article has the same use as identified in the tariff provision. See, e.g., *United States v. Consol. Int'l Equipment & Supply Co.*, 8 CCPA 145 (1971)(holding a "step-setting machine" to be within a tariff provision for typesetting machines because it performed the function of typesetting); see also *Lanston Int'l v. United States*, 49 CCPA 123 (1962)(test is whether the machine is designed to "carry out a process" identified in a "use" tariff provision).

HTS Heading 5605 is not a "use" provision of the tariff, but as noted *infra*, Customs incorrectly seeks to apply use principles in its "essential resemblance" analysis.

5605.00.90 Other[12].

The provision incorporates its own definition of what is a metalized yarn. The requirements for classification as a metalized yarn, and the ways in which the Best key product meets each requirement, can be summarized below:

[12] It is unquestioned that Best Key's metalized yarn is not classifiable under HTS item 5606.00.10, which covers " Metal coated or metal laminated man-made filament or strip or the like, ungimped, and untwisted or with twist of less than 5 turns per meter

| Statutory Requirement | Best Key Yarn Characteristic |
|---|---|
| "... whether or not gimped or ungimped . . . " | Best Key metalized yarn is not gimped. |
| "... being textile yarn, or strip or the like of Heading 5404 or 5405 ... | Best Key's metalized polyester yarn is "a textile yarn". Furthermore, the metal is added at the time monofilaments are extruded):: |
| "... combined with metal ... "" | Customs concurs that Best Key's yarns are combined with metal. |
| "... in the form of thread, strip or powder or covered with metal." | Best Key's metalized yarns are combined with metal in the form of powder. The definition of metal powder, for tariff classification purposes, is found at Note 8(b) to Section XV of the HTS, and covers "Products of which 90 percent or more by weight passes through a sieve having a mesh aperture of 1 mm.", indicating that the nanopowders used in the Best Key process were within the Congressional understanding of what constituted a metal powder at the time the tariff was enacted. |

If, as the courts have held, the "essential resemblance" requirement is to be judged based on the requirements of the tariff provision in question, the inescapable conclusion is that Best Key metal yarns of the kind described in *New York Customs Ruling N187601* fall squarely within HTS Heading 5605.

With these general observations in mind, we now consider Customs' specific reasons for asserting that Best Key's metalized yarn does not have an "essential resemblance" to the goods of HTS Heading 5605.

## B. Customs Reliance on Other Agency Definitions is Misplaced

Customs first asserts that Best Key's yarns are not within the common meaning of the term "metalized yarns" as it appears in Heading 5605 because they do not comport with the Federal Trade Commission (FTC) definition of "metallic" fiber **as** "A manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal.", citing 16 C.F.R. § 303.7.

The FTC definitions do not govern "common meaning" for tariff purposes, for many reasons. First, the definitions are not part of a system of classification, nor do they purport to have rules for their interpretation. Second, the rules are frequently amended to include newly-developed fibers, and include not only generic, objective descriptions, but also trade names as well. They may be amended on application. See, e.g., 67 Fed. Reg. 4901 (February 1, 2002) (amending the rules to add a definition of "PLA"); 62 Fed. Reg. 28342 (May 23, 1997)(amending the regulation to add a definition of "elastoether"). Third, the current FTC regulatory definition of "metallic" fiber dates from 1959, a generation prior to adoption of the Harmonized System tariff, and cannot possibly reflect the intent of the drafters at the time the HTS was enacted into law.

Moreover, other agency definitions do not govern the determination of the "common meaning" of a tariff term for Customs purposes. In *Bestfoods v. United States*, 28 CIT 1053 (2004), the Court of International Trade considered the classification of a "low fat peanut butter spread" comprised 60% of peanuts and the remainder of corn syrup, oils, and other non-peanut materials. Asserting that the product could not be classified as "peanut butter", the plaintiff claimed that because the Department of Agriculture had promulgated a mandatory "Standard of Identity" for

""peanut butter", which prohibited such goods from containing more than 10% of non-peanut materials, the plaintiff urged that the FDA definition must perforce establish both the common meaning and commercial designation of "peanut butter" for tariff classification purposes. After all, the plaintiff noted, the subject goods could not lawfully be marketed as "peanut butter" in the United States. The CIT disagreed, holding:

> . . . one of the purposes of FDA standards of identity "is to promote honesty and fair dealing in the interest of consumers by truthful and informative labeling of food products" and also that such standards are "helpful in defining a product but . . . **not controlling in determining [its] classification . . . under the H[TSUS].**" See, e.g., *Nestle Refrigerated Food Co. v. United States*, 18 CIT 661, 666 (1994)("FDA standards of identity are not controlling for tariff classification purposes"), citing *Charles Jacquin et Cie v. United States*, 14 CIT 803 (1990); *Alexandria Int'l, Inc. v. United States*, 13 CIT 689 (1989); *Joseph F. Hendrix v. United States*, 82 Cust.Ct. 264, C.D. 4809 (1979). Cf. *United States v. Mercantil Distribuidora, S.A.*,43 CCPA 111, 116-17, C.A.D. 617 (USDA regulation interpreting meaning of "cured beef" not binding for tariff purposes); *Amersham Corp. v. United States*, 5 CIT 49, 56, 564 F.Supp. 813, 817 (1983), aff'd, 728 F.2d 1453 (Fed.Cir. 1984)(rules and regulations to protect public safety not determinative of tariff classification disputes). Indeed, as pointed out at the beginning hereof, the HTSUS subheading under review provides for peanut butter and paste *eo nomine*, which kind of provision has long been understood to encompass all forms of the substance within that nomenclature.

*See id.* at 1058 [emphasis added, footnotes omitted]. The Court noted that the Bestfoods product at issue could not lawfully be labeled as "peanut butter" nor offered for sale in the United States under that name, by virtue of the FDA regulation. But that did not override the rule of tariff construction that an eo nomine provision (in that case, for "peanut butter") covered all forms of the named product, including "reduced fat peanut butter").

Similarly, in this case, it would be improper for Customs to try to substitute the FTC definition of "metallic fibers" for the statutory elements defining "metalized yarn" (a different phrase) in HTS Heading 5605. Certainly, the elements of the FTC definition of that phrase cannot be used to gauge whether Best Key's yarns bear the "essential resemblance" to the goods covered by Heading 5605[13].

### C. **That Selected Technical Sources Define "Metalized Yarn" as Consisting of Pre-existing Yarn or Plastic Film Bonded to Metal Is Not Dispositive**

Customs' citation of various industry and technical sources for definitions of metalized yarn, similarly, cannot substitute for the conditions of classification in determining whether Best Key's metalized yarns have the "essential resemblance" to the goods identified in HTS Heading 5605.

Initially, the definitions offered by Customs are themselves inconsistent. For instance, "Metallic Fibers" by Anita A. Desai, defines a metallic yarn as "a continuous flat monofilament produced by a combination of plastic film and metallic component so that the metallic component is protected." This is clearly a reference to "lurex", the most common metalized yarn currently known to commerce. [It should be noted that, in the lurex production process, plastics (HTS Chapter

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[13] Indeed, in the textile area, the FTC uses stricter test to determine when a product may be labeled as "Made in USA" (see Federal Trade Communication, *Guide to Complying With the Made in the USA Standard*) than Customs uses to determine whether an imported good is a product of a foreign country, see 19 U.S.C. §3592, 19 C.F.R. §102.21. Arising as it does from a different statutory grant of authority, the FTC rule is of no moment in construction of the Customs laws.

The FTC Guide as available for viewing or download at http://business.ftc.gov/documents/bus03-complying-made-usa-standard (last visited May 19, 2013)

39) are combined with metals (HTS Section XV) and no textile product emerges until the combination is slit to "fiber" widths, which puts paid any notion that HTS Heading 5605 requires the prior existence of a non-metalized textile fiber][14]. On the other hand, the International Bureau for the Standardization of Man-Made Fibres further notes that "'metalized' yarns are yarns coated with metal", obviously a reference to a totally different product, with no plastic being mentioned, and no apparent "protection" for the metal component. Which definition, then, embodies the "common meaning" of "metalized yarn" for purposes of HTS Heading 5605? Or is it possible that both types of yarns fall into the tariff definition of metalized yarns?

Indeed, reference to the Explanatory Notes to HTS Heading 5605 indicates that both types of yarns in these definitions are covered by HTS Heading 5605. Customs' proposed revocation already concedes that the method by which metalized yarns are produced is not germane to its classification. Indeed, as the Explanatory Notes indicate, "metalized yarns" can be produced by a great many methods, such as gimping man-made fiber yarn with thread or strip, twisting, cabling, application of metal (in whatever form) by electrodeposition, by the use of adhesives, or parallel metalized yarns held together with various materials. Moreover, the tariff definition of "metalized yarns" covers metals with any proportion of metal present, even if the metalized filaments are combined with non-metalized filaments. This is through application of Note 2(b)(A) to HTS Chapter XI, which creates an exception to the normal "chief weight" rule of tariff classification for textile materials, and which provides that:

> (a) Gimped horsehair yarn (heading 5110) and metalized yarn (heading 5605) are to be treated as a single textile material the weight

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[14] The *Explanatory Notes* to HTS Heading 5605 specifically reference the lurex manufacturing process.

of which is to be taken as the aggregate of the weights of its components; for the classification of woven fabrics, metal thread is to be regarded as a textile material;

It is unlikely that the sources cited by Customs anticipate this special rule of classification which attends under the HTS to the classification of "metalized yarns" of Heading 5605. Nor has Customs contended that the industry sources it cites are exclusive; as noted in this submission, other industry sources recognize the growing use of nanometals in textile production. Customs has cited no precedent in which a Court referred to industry or trade publication articles to determine whether goods bore an "essential resemblance" to the goods covered by a given tariff heading. There is no basis for Customs (or a reviewing court) to do so now. Customs' citation to literature does not establish that Best Key's yarns do not bear an "essential resemblance" to the goods identified in HTS Heading 5605.

### D. Comments from Competing Domestic Trade Associations are Neither <u>Binding Nor Persuasive</u>

Next, Customs asserts that domestic organizations representing Best Key's competitors, such as the American Fiber Manufacturers Association (AFMA) and the National Council of Textile Organizations (NCTO) were of the opinion that "the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn." Obviously, without some citation to a source document, or even a source individual providing the information, this assertion cannot be given weight (and certainly would receive no deference by any reviewing court).

However, when one consults the "Fiber Tutor" on the AFMA's website, one finds numerous definitions of "metallic" yarn. There is a reference to the first commercial production of metalized yarn in 1946 by the Dobeckmun Company, and a note that "metalized yarn is not produced in the United States" (suggesting that AFMA's members have little expertise in the field). The FTC definition of "metallic" fiber is reproduced, and the Fiber Tutor site then notes, with respect to "Basic Properties of Metallic Fiber Production"[15], that "**In the more common process for production**, aluminum foil is coated on one or both sides with adhesive to which the desired coloring matter has been added. A sheet of transparent plastic film is then applied to each side of the adhesive coated foil. The assembly is then slit into narrow widths." http://fibersource.com/f-tutor/metallic.htm (last visited May 14, 2013).

Interestingly, this describes a process not described by the other definitions to which Customs has resorted. It also indicates that this is only the "most common" process for producing metalized yarns and that many other processes exist.

The National Council of Textile Organizations, a self-described "lobbying group", rather than an industry or standards association, and its website proclaims a policy of pursuing protectionism. http://www.ncto.org/tradejobs/index.asp (last visited May 14, 2013). Its website contains no definitional information, indicating that it does not have any authoritative weight in defining textile terms.

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15 It bears repeating that what a trade association may consider a "metallic fiber" may not comport with what HTS Heading 5605 considers a "metalized yarn". For instance, a cotton yarn gimped with a metal thread might qualify as a "metallic fiber" in industry parlance, but would not be considered a metalized yarn for tariff purposes (since it would not be a yarn of HTS Heading 5404 or 5405).

Obviously, the unidentified trade association "agreement" on the supposed meaning of the term "metalized yarn" has no weight in this case, and certainly the views of these organizations do not define the test for "essential resemblance".

### E. Neither the Appearance Nor Uses of Metalized Yarns Are Germane to Their Classification

Customs next observes that "the fiber combined with metal in the process used by Best Key looks and feels like a standard polyester fiber, as does the resulting fabric." Precisely so. That is one of the key features of the innovation, that Best Key has managed to create a metalized yarn for fashion purposes which does not have the rough, scratchy texture of lurex or similar yarns made from plastic foils[16]. But that is hardly germane to the classification at hand.

There is absolutely nothing in HTS Heading 5605, nor the Explanatory Notes thereto, which discusses how a metalized yarn should "look" or "feel". Indeed, since the Explanatory Notes to Heading 5605 make it clear that metalized yarns are included in the heading regardless of the proportion of the metal present, and Customs often classifies as "metalized" yarn items containing 1% or less by weight of metal. *New York Ruling Letter N062518 of June 3, 2009* (yarn with 1% metal classified under 5605.00.90); *New York Ruling Letter N228815 of April 5, 2013* (1% metallic decorative cord);*New York Ruling Letter N159135 of April 20, 2011* (cotton yarn with 1% metal classified under 5605.00.90). We have appended at Exhibit I a chart of rulings in which Customs has clarified that any amount of metal in a yarn renders it classifiable as a "metalized yarn" of

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[16] As noted *supra*, obtaining a smoother, less scratchy metalized textile yarn is a long-standing goal of lurex producers, who are currently working with 6-micron film substrates toward this end.

Heading 5605. One would not expect yarns with such a small amount of metal to have a metallic feel (indeed, the scratchiness in lurex is a byproduct of the plastic film used in its production, not its metal content).

Nor do the tariff or the Explanatory Notes say anything about how a metalized yarn fiber (or cloth made therefrom) should "look". Customs asserts that metalized yarns "have a distinctive metallic appearance,( hence its popularity for decorative applications)", but this is not the case. First, HTS Heading 5605 is not a "use" provision. While some metalized yarns, or goods made therefrom, may be used for decoration, this is certainly not true, for example of protective garments which use metal powders to impart antimicrobial or UV-shielding applications. Indeed, Customs has repeatedly classified as "metalized' yarns a variety of products where the metal had no visual impact whatsoever and where, as here, the metal was added for a functional purpose. These rulings are summarized in the table below:

| | Ruling Number | Wording Description | Remark |
|---|---|---|---|
| 1 | NY N062518 | metal wire has a reinforcing, rather than a decorative, purpose | Reinforcing Purpose |
| 2 | NY B89128 | The wire is at the core of these cords and provides stiffness. | Provide Stiffness |

| | | | |
|---|---|---|---|
| 3 | NY B89130 | The core of each cord consists of cotton with wire added for stiffness, while the outer covering is of metalized yarns. | Provide Stiffness |
| 4 | NY L82752 | Shaped for decorative purposes. | Shaped for decorative purposes |
| 5 | NY J84177 | Each strand, or ply, has a thin wire in it allowing the cord to be shaped for decorative purposes. | Shaped for decorative purposes |
| 6 | NY J84274 | The wire allows the cord to be bent to shape; the wire itself is not decorative. | Shaped for decorative purposes |
| 7 | NY A89028 | The wire core serves a decorative purpose by enabling one to shape the yarn in a desired way. | Bent to shape, wire itself not decorative. |
| 8 | NY R00713 | Used in tying wrapped presents. | Tying |
| 9 | NY J82793 | They are the type of fancy cord used to wrap gifts and for similar uses. | Wrap gift |
| 10 | NY I80137 | Decorative packaging and arts and crafts applications. | Decorative packaging |
| 11 | NY A88665 | Yarn which consists of one metallic strip around which is wrapped two nylon monofilaments. | Not shiny or metallic |

| | | | |
|---|---|---|---|
| 12 | HQ 964997 | **Typical applications for tinsel conductors include decorative and electrical, and medical, telecommunications, robotics, voice coil lead wire for shaver cord, hearing aid cords and microphone receiver cords, spiraled flexible cord** | **Not shiny or metallic**<br><br>**Tinsel conductor** |

Here again, if HTS subheading 5605 were a "classification by use" provision of the tariff, the use of the product might be relevant for the "essential resemblance" analysis Customs is purporting to conduct. It is not, however, and Customs errs by trying to impute requirements of "look" or "feel" to the goods of that heading.

The table above refutes Customs' argument that metallic yarns, and fabrics made therefrom, typically have a metallic appearance, and puts paid the notion that metalized yarns must have some appearance characteristics related to their metal content. Indeed, as noted supra *when* discussing information on the Lurex Corporation's website, visual features associated with "lurex" yarns are often not the product of the metal content, but come from using "accent dyes" on the polyester film, using irridesent lamination, or treating the plastic laminates with chemicals or imprinting "matte"-type services.

As for Customs' observation that the amount of metal in Best Key's yarns is small and must be detected by laboratory testing, this is true of virtually all metalized yarns. Indeed, it is Customs' unwavering practice to send for laboratory testing all samples of metalized yarn apparel submitted for a ruling, even if composed of lurex, which supposedly has a "visible metallic" aspect (according to Customs). The need for laboratory testing in all cases refutes the notion that the presence of metal can be detected from a visible aspect.

**F. That Metal Powder Can be Added to Fibers for Antistatic Purposes is Not Relevant in this Context.**

Customs notes that the addition of metal to a polyester slurry for antistatic purposes is not a new process. This is true, nor are fibers so made classifiable under HTS subheading 5605. The Explanatory Notes to the heading indicate that the heading does not include "Yarn composed of a mixture of textile materials and metal fibres conferring on them an antistatic effect."

However, this exclusion does not apply to Best Key metalized yarns. The laboratory report submitted with the company's initial ruling request [See Exhibits D,E] indicated that Best Key's metal yarn had no significant antistatic properties.

We note, as an introductory matter, that HTS Heading 5605 merely requires the presence of metal in one of the identified forms in the fiber; it does not require that the metal perform a specific function. [This should be contrasted, for example, with the rules for classification of plastic-coated textile fabrics, which require the coating to have some visible or significant effect on the fabric].

Moreover, the Best Key metal yarns do not use metal powder for antistatic purposes. The typical material used in antistatic fibers and fabrics is a microns-thin stainless steel fiber. Antistatic applications require the high electrical conductivity of stainless steel, and they also require the directional length of a fiber, so that electricity resulting from static buildup can be safely brought to ground. These types of fibers are used in petrochemical and other industrial applications, in order to remove ignition sources resulting from static buildups. These types of fibers are also extensively used in antistatic carpeting applications.

Metal nanopowders of the kind used in Best Key's metalized yarns have neither the conductivity nor directional matrix needed to ground static discharge, and cannot be used for that purpose. Rather, their metals impart antimicrobial and UV-protection characteristics. Such characteristics do not fall within the exception for antistatic fibers.

### 4. Customs' Proposed Revocation of *New York Customs Ruling N187601 of October 25, 2011* is Arbitrary and Capricious, and Arises from Improper Motivations

Finally, Best Key is constrained to point out that Customs' proposed revocation of *New York Customs Ruling N187601* is arbitrary and capricious, and the result of apparent irregularities on the part of Customs' National Commodity Specialist Staff and the New York Customs Laboratory. Indeed, as discussed herein, the proposal to revoke *New York Customs Ruling N187601* had its genesis in an improper collaboration between this two offices to misrepresent and misreport the result of laboratory tests performed on garments made with the Best Key metalized yarn that was the subject of *N187601*.

The yarn classified under 5605.00.9000 by Customs in *New York Ruling Letter N187601*, was used to create the Johnny Collar garment which was the subject of *New York Customs Ruling N196161 of April 13, 2012*[17]. Best Key commissioned an independent laboratory to test the yarn to determine that it contained the requisite metal before submitting a ruling request for a tariff classification. [A copy of the ruling request is appended at Exhibit J] The lab, Vartest Laboratories, found that the yarn contained 2700ppm of aluminum distributed evenly throughout the polyester

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17 Customs has proposed to revoke this ruling, acknowledging that the Customs Laboratory's testing report was incorrect.

matrix.[18] See Exhibit K. The Vartest report used an energy dispersive x-ray analysis, performed in accordance with governmental testing standards. The test revealed the distinct presence of aluminum in the yarn.

Similarly, the Customs' Laboratory also found aluminum present in the yarn.[19] The lab was charged by a National Import Specialist (NIS) with, *inter alia*, determining "the amount of metal in the yarn" and "if possible, the type of metal found" [Exhibit L]. The laboratory test, performed using CBP Laboratory Test Method CBPL-25-01 (apparently based on or equal to ASTM E1621] found peaks of "bromine, titanium, ruthenium, vanadium and silicon". [See Exhibit M] What the Laboratory Report does not say, but which is clear from Attachment 8 to the report, is the presence of a very pronounced peak at the energy dispersive wavelength for aluminum. Indeed, three (3) separate analysis charts incorporated in said Attachment 8 show a distinct peak at the aluminum wavelength [Exhibit N].

Laboratory Notes appearing at Attachment 9 to the report indicate, however, that, in performing the test, Customs was not interested in obtaining objective evidence of the presence of metal, but rather in a result-oriented exercise designed to allow a National Import Specialist (NIS) to argue for the revocation of a ruling. A Significant Contact Report [Exhibit O] filed by an analyst from the Customs Laboratory stated:

> I called NIS Mary Ryan today to discuss a Metallic Yarn fabric sample. [Deleted material} Marybeth Dunaski and William Raftery were all present at the time of the conference. I informed Mary Ryan

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18 Test Results, Vartest Laboratories. December 1, 2011..

19 See Verification 2-13-12. obtained under the Freedom of Information Act.

> that in my opinion the submitted sample is not of "metallic yarn"[20]. She agreed with me. I mentioned to her about ruling Number 187601 which considered this type of yarns "metallic yarn". **Mary told me that the purpose of the sample (NY 20120156) is to request HQ to reverse the ruling published in ruling number N187601 based on the laboratory report NY 20100156 (sic), therefore, I should disregard Ruling #N187601 while writing laboratory report. It was also decided that the laboratory report number NY 20120156 will only state that the sample is wholly of polyester.**

This a remarkable statement which suggests a deliberate attempt to falsify and skew the Customs Laboratory's report. Not only was the Laboratory told to disregard **New York Customs Ruling N187601** which, then and now, represents the "official position of the Customs Service, which is "binding on all Customs Service personnel." See 19 C.F.R. §177.9(a).[21] The Laboratory personnel deliberately disregarded published ruling precedent which was binding on them. Moreover, NIS Ryan and the Laboratory personnel apparently connived to mis-represent the results of the Customs Laboratory test, deciding "that the laboratory report number NY 20100156 **will only state that the**

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[20] One questions the value of a legal opinion voiced by a laboratory analyst, whose job is merely to find facts.

[21] Section 177.9(a) of the Customs Regulations provides in pertinent part:

> **§ 177.9 Effect of ruling letters.**
>
> (a) Effect of ruling letters generally. A ruling letter issued by the Customs Service under the provisions of this part represents the **official position of the Customs Service** with respect to the particular transaction or issue described therein and is **binding on all Customs Service personnel** in accordance with the provisions of this section until modified or revoked. In the absence of a change of practice or other modification or revocation which affects the principle of the ruling set forth in the ruling letter, that principle may be cited as authority in the disposition of transactions involving the same circumstances.

**sample is wholly of polyester."** Thus, the laboratory report issued for that garment, which neglected to mention the presence of any metal, was not only false, but intentionally so.

As if mis-stating a conclusion was not bad enough, it appears that the Laboratory personnel were also induced to misrepresent their factual findings, deliberately omitting any reference to the aluminum content of the yarns which made up the product, notwithstanding that the Customs laboratory's report clearly showed the presence of significant aluminum, and corroborated the Vartest laboratory results in this regard.

Another *Significant Contact Report*, [Exhibit P] evidences a subsequent contact between the laboratory analyst and NIS Ryan 3 days later, and contains the cryptic statement "Mary Ryan confirms to test the sample **without answering all the questions**", presumably about metal content of the yarns. To answer those questions truthfully would expose the initial fabrication, of course.

Without ascribing motivations, it is clear that, at a minimum, this behavior by Customs personnel is extremely disturbing and calls into question the integrity of the rulings process and of the conduct of the Customs Laboratory. If an NIS wished to have *New York Customs Ruling N187601* reconsidered or revoked, that official had established channels within the agency to use for the purpose. There was no need to falsify a laboratory report, which, in turn, led to the issuance of an incorrect Customs ruling (which Customs has now agreed to revoke). Best Key has suffered millions of dollars in lost business opportunities as a result of the improper ruling, and has incurred many thousands of dollars in legal fees and costs to have the ruling set aside and things put right. None of these losses would have occurred had Customs personnel performed their jobs honestly and according to established procedures.

To pursue a revocation of *New York Ruling N187601*, as Customs Headquarters has done, is to not only forgive the irregular action of its NIS and Laboratory personnel, but to reward it. This is particularly true since, as noted above, the proposed revocation is contrary to every rule of law governing the interpretation and enforcement of the tariff provision in question.

According to the *Explanatory Notes* and language of Heading 5605, the presence of aluminum in the garment which was the subject of *New York Customs Ruling N196161* transforms what would be polyester yarn, into metallic yarn classified under Heading 5605. Curiously, the *Explanatory Notes* appear as Attachment 10 to the Customs Laboratory report, so the laboratory was clearly aware of it. However, for reasons unknown, Customs, in issuing its ruling disregarded both laboratory tests and concluded that the fabric was wholly composed of polyester yarn. Although the yarn may have been composed in chief weight of polyester, the fact is that the presence of the metal changes its classification, and causes fabric composed of the yarn to be treated as "other fabrics". See, e.g., *New York Customs Ruling N206236 of March 1, 2012; New York Customs Ruling N181240 of February 28, 2012; New York Customs Ruling N171762 of February 3, 2012; New York Customs Ruling N187437 of January 20, 2012; New York Customs Ruling N183198 of January 19, 2012.*

We have detailed above the reasons why Customs' proposed revocation is not in accordance with law. However, given the above history of Customs officials seeking to have New York Customs Ruling N187601 revoked through false premises, and this misconduct having been brought to the attention of senior Customs officials, we can only state that in proceeding with the revocation – after admitting the presence of metal in the yarns – is arbitrary and capricious as well.

## V. CONCLUSION

From the above, it follows that there is no basis in law or fact for revoking or modifying *New York Customs Ruling N187601 of October 25, 2011*. Customs proposed revocation is not supported by evidence on the record, is arbitrary, capricious and not in accordance with law.

Customs should vacate and withdraw its proposal to revoke this ruling.

Please contact undersigned counsel if there are any questions, or if additional information is required.

Very truly yours,

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May 20, 2013

Our File: 218-01

**BY ELECTRONIC FILING AND**
**BY FEDERAL EXPRESS**
United States Customs and Border Protection
Office of Regulations and Rulings
90 K Street, N.E.
Washington, D.C. 20229

Attention: Mr. Joseph W. Clark

Re: Best Key Textiles Ltd.: Comments in Response to Customs Proposal to Revoke New York Customs Ruling N187601 of October 25, 2011

Dear Mr. Clark,

Enclosed for filing please find comments on behalf of our client Best Key Textiles, Ltd., in response to the proposal by Customs and Border Protection, published in the April 24, 2013 edition of the Customs Bulletin, to revoke New York Customs Ruling N187601 of October 25, 2011.

The electronic submission is divided into three parts:

| | |
|---|---|
| Part I: | Comments and Legal Analysis |
| Part II: | Exhibits A-G |
| Part III: | Exhibits H-P |

Confirmation copies are being sent by overnight courier.

Please contact undersigned counsel if there are any questions concerning this matter.

Very truly yours,

John M. Peterson

cc: Myles Harmon, Esq. (W/encl.)
Ieva O'Rourke, Esq. "
Claudia Garver, Esq. "

John Pellegrini, Esq. "

Mr. John Wu "
Ms. Ivy Lee "
Mr. Dan Johnson "
Mr. Bruce Brunner :

DEPARTMENT OF HOMELAND SECURITY
UNITED STATES CUSTOMS AND BORDER PROTECTION

| | |
|---|---|
| IN THE MATTER OF THE PROPOSED REVOCATION OF NEW YORK CUSTOMS RULING N187601 OF OCTOBER 25, 2011 | Office of Regulations and Rulings<br>Washington, D.C. |

**COMMENTS OF BEST KEY TEXTILES LTD.**
**IN OPPOSITION TO REVOCATION OF RULING**

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May 20, 2013

**DEPARTMENT OF HOMELAND SECURITY**
**UNITED STATES CUSTOMS AND BORDER PROTECTION**

| | |
|---|---|
| **IN THE MATTER OF THE PROPOSED REVOCATION OF NEW YORK CUSTOMS RULING N187601 OF OCTOBER 25, 2011** | **Office of Regulations and Rulings Washington, D.C.** |

**COMMENTS OF BEST KEY TEXTILES LTD.**
**<u>IN OPPOSITION TO REVOCATION OF RULING</u>**

## I. <u>INTRODUCTION</u>

This Memorandum of Points and Authorities is submitted on behalf of Best Key Textiles, Ltd., of Shenzhen, China, in opposition to United States Customs and Border Protection (CBP)'s proposed revocation of *New York Customs Ruling N187601 of October 25, 2011* [Exhibit A], which classified certain metalized yarns produced by Best Key under subheading 5605.00.9000 of the Harmonized Tariff Schedule of the United States (HTS). Notice of the proposed revocation was published in the April 24, 2013 edition of the *Customs Bulletin,* and is reproduced as Exhibit B to these comments. .

Any revocation of *New York Customs Ruling N187601* would be arbitrary, capricious, and not in accordance with law. As discussed in further detail below:

>. *New York Customs Ruling N187601* is correct, both as a matter of fact, and a matter of law;

> Customs' proposed revocation is not in accordance with law,

since (1) an eo nomine provision covers all forms of the named article, (2) the tariff schedule is written for the future as well as the present, and (3) Customs may not, by a reference to so-called "common meaning" of the term "metalized yarn" limit the statute to forms of metalized yarn previously devised;

> Best Key metalized yarn is indeed "metalized yarn" within the common and commercial meaning of that term;

> Customs' proposed revocation is arbitrary, since it was ingeminated by members of Customs' National Import Specialist Staff for improper purposes, and furthered through the apparent falsification of Customs Laboratory reports.

For the reasons provided herein, Customs should withdraw its proposal to revoke *New York Customs Ruling N187601 of October 25, 2011.*

Customs' proposed revocation is unwarranted as a matter of fact, and incorrect as a matter of law. Best Key's metalized yarns, classified in *New York Customs Ruling N187601*, satisfy all statutory requirements for classification as a "metalized yarn". Although produced by a new and unique nanometal process, for which patent protection has been sought, Best Key's subject yarns are covered by the *eo nomine* provision for metalized yarns of HTS subheading 5605.00.9000. Absent contrary Congressional intent – not in evidence here – an *eo nomine* provision for article covers all forms of the article, whether or not known to commerce at the time the tariff was drafted. See, e.g., *Carl Zeiss, Inc. v. United States*, 195 F.3d 1375, 1379 (Fed. Cir. 1999). "An eo nomine designation, with no terms of limitation, will ordinarily include all forms of the named article." Id. (citation omitted). It is equally clear tariff schedules are written "not only for the present but also for the future, thereby embracing articles produced by technologies which may not have been employed or known to commerce at the time of the enactment." *Corporation Sublistatica, S.A. v. United States,*

1 CIT 120, 126, 511 F. Supp. 805, 809 (1981); See also *Davies Turner & Co. v. United States*, 45 CCPA 39, 41, C.A.D. 669 (1957).

That Best Key's metalized yarns contain metal introduced in the form of powder is undisputed, and conceded in Customs' proposed revocation notice. The classification of Best Key's metalized yarns therefore turns purely on issues of law – specifically, how HTS Heading 5605, including its references to "textile yarn, or strip or the like of heading 5404 or 5405" should be construed. For reasons discussed herein, Best Key submits that the reference is intended to show that certain yarns classified under HTS Heading 5605 must satisfy the dimensional and compositional limits set forth in Headings 5404 or 5405, and must contain metal "in any proportion" See EN to HTS Heading 56.05]. There is no reason to interpret the heading as requiring particular levels of metal content, to require the contained metal to perform certain functions, or to limit the methods in which a metalized yarn may be produced.

## II. DESCRIPTION OF THE MERCHANDISE

Best Key's metalized yarns, which are the subject of *New York Customs Ruling N187601*, are polyester[1] yarns which have been combined with 40 nanometer aluminum or zinc nanometal powders. Nanometal powders (i.e., pure metals in small particle sizes) impart anti-bacterial, anti-microbial and other useful properties to yarns and fabrics. As discussed in more detail herein, certain nanometals (particularly silver and, to a lesser extent, zinc and aluminum) impart anti-microbial properties. Zinc nanometals can be used to increase a yarn or textile's ability to shade from

[1] Best Key has also produced metalized rayon yarns by a similar process.

ultraviolet rays along the electromagnetic spectrum.

While some metalized yarns are produced by laminating threads with a metalized film (a product known commonly and commercially as "Lurex", or by spray coating textile yarns with metallic powders, Best Key's process takes advantage of the development of metal nanopowders, and allows the metal powders to be distributed throughout the mass of the yarn itself, increasing the longevity of the yarn's metallizing elements.

The Best Key process introduces the metal to the polyester material during the yarn production stage.

The production of Best Key's metalized polyester yarns begins with the drawing of polyester yarn. Polyester is made by isolating ethylene derived from petroleum refining to yield ethylene glycol. Dimethyl terephthalate is then reacted with the ethylene glycol in the presence of a catalyst, producing an isolated monomer. The monomer is then combined with terephthalic acid and heated to a temperature of 472°F (280°C). This produces clear molten polyester (a repeating molecule, or polymer), which is extruded through a slot to form long ribbons of polyester.

The extruded polyester ribbons are then cooled and broken up into chips of homogeneous size.

To produce polyester yarn, the chips are melted at temperatures exceeding 500°F, to form a liquid solution. At this point in Best Key's process, aluminum, zinc or other nanometal in powder form is added to the polyester slurry, and titanium dioxide is added as a delusterant. The polymer mixture is then forced through a spinneret, which yield yarns of specified denier (thickness). The denier of the yarn is determined by the diameter of the spinneret. This process produces a soft polyester yarn which is then stretched, forcing the polyester molecules to align in parallel formation.

The yarn is stretched to approximately five (5) times its original length, which increases is strength, tenacity and resilience.

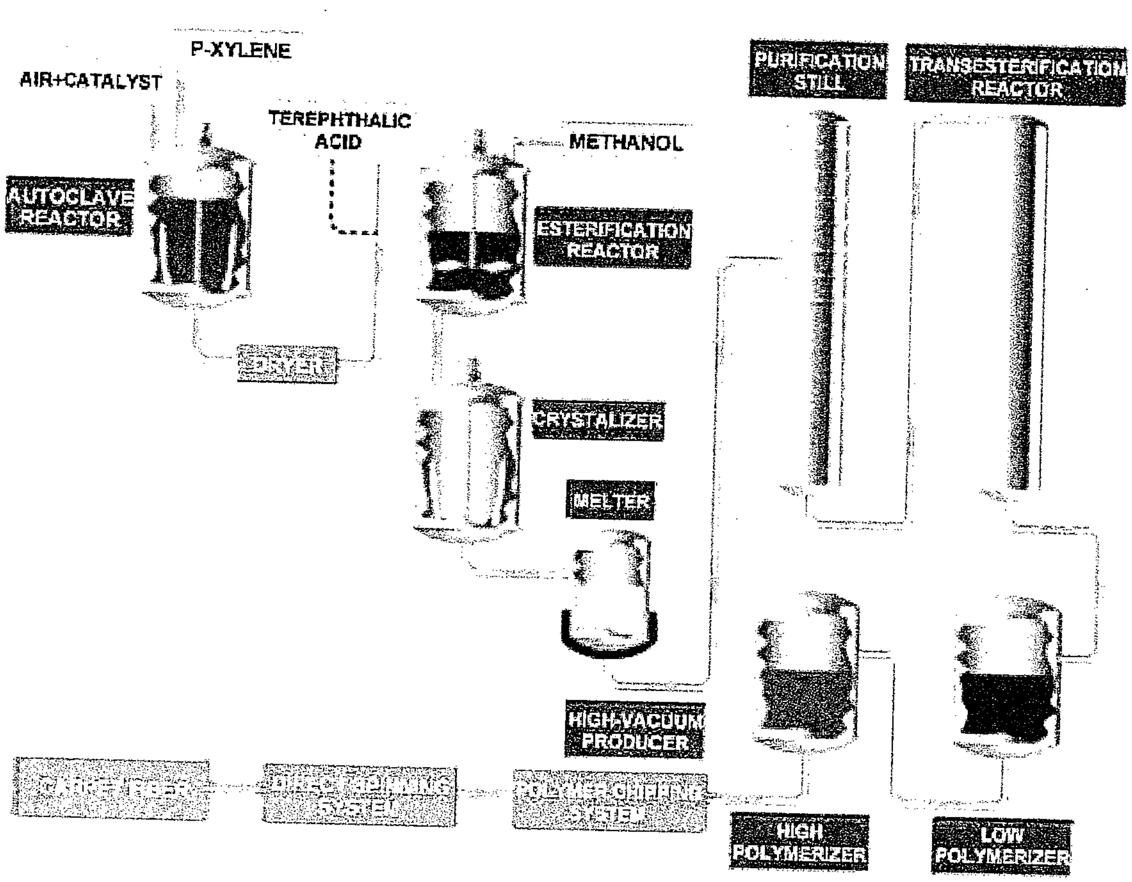


Fig. 1. Polyester yarn production process.

The use of the spinneret to distribute the nanometal throughout the polyester yarn is similar to the nano-textile production method known as "Electrospinning". See Soutter, Nanotechnology in

Textiles, available at http://www.azonano.com/article.aspx?ArticleID=3058#2 (last visited May 13, 2013). Soutter describes "electrospinning" as follows:

> This is a well established technique for manufacturing polyester fibers. The apparatus consists of a syringe with a capillary needle. A high voltage across the needle creates a charged jet of material which spins out into fibers to be collected on a charged plate.

Other than the use of a charged plate to collect fibers, Best Key's process is similar, in that powder in the spinneret, mixed with the plastic material to make the polyester, is ejected from the spinneret in a "jet of material" which is stretched and cooled to make a metalized polyester fiber.

At the time it applied for *New York Customs Ruling N187601*[2], Best Key was producing two principal metalized yarn products. The first was an **80 denier polyester yarn containing 1900 ppm of aluminum**. Scientific examination indicates that the aluminum metal is distributed through the matrix (structure) of the yarn [See Exhibit D]. An energy dispersive x-ray taken by the independent laboratory Vartest shows clearly the presence of titanium, zinc and aluminum in the yarn. The yarn has no significant antistatic characteristics and has less than 1 turn per inch. The total presence of metal in the yarn (aluminum, titanium[3], trace zinc) accounts for about 0.70% of the total yarn weight. See Exhibit D.

The second product was a **79.6 denier polyester yarn containing 2800 ppm of zinc.** The zinc is distributed evenly throughout the polyester matrix. The total presence of metal in the yarn (zinc, titanium, trace aluminum) is 0.74% by weight. The metal is clearly identifiable through an

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[2] A copy of the ruling request is appended at Exhibit C hereto.

[3] Titanium metal in these yarns is present in minute quantities, and derives from the titanium dioxide delusterant used.

energy dispersive x-ray examination, as detailed in the Vartest report shown in Exhibit E hereto.

The issue presented is whether these yarns are properly classifiable as "metalized yarns" of HTS subheading 5605.00.9000, as held in *New York Customs Ruling N187601.* As noted above, there is no question that all of the yarns include metal, introduced in the form of powder, and that the metal was deliberately introduced. Moreover, the metal remains identifiable in the yarn.

For the reasons set out herein. Best Key submits that *New York Customs Ruling N187601* correctly classifies these yarns, and that the proposed revocation of that ruling is arbitrary, capricious and contrary to law.

## III. RELEVANT STATUTORY PROVISIONS

Harmonized Tariff Schedule (HTS)(2012) Heading 5605 provides for:

| | |
|---|---|
| **5605.00** | Metalized yarn, whether or not gimped, **being textile yarn, or strip or the like of Heading 5404 or 5405**, combined with metal in the form of thread, strip or powder or covered with metal: |
| 5605.00.10 | Metal coated or metal laminated man-made filament or strip or the like, ungimped and untwisted or with twists of less than 5 turns per meter[4] |
| 5605.00.90 | Other |

HTS Headings 5404 and 5405, referenced in the heading, provide respectively for:

| | |
|---|---|
| 5404 | Synthetic monofilament of 67 decitex or more and of which no cross-sectional dimension exceeds 1 mm; strip and the like (for example, artificial straw) of synthetic textile materials of an apparent width not exceeding 5 mm: |
| 5405 | - Artificial monofilament of 67 decitex or more and of which no cross-sectional dimension exceeds 1 mm; strip and the like (for example, artificial straw) of artificial textile materials of an apparent width not exceeding 5 mm. |

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[4] This heading cannot apply to Best Key's product, since it requires goods to be "coated" or "laminated" with metal.

## IV. ANALYSIS

### 1. Metalized Yarns Are Made By Several Different Processes

HTS Heading 5605 provides for Metalized yarns "being textile yarn, or strip or the like of Heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal". In this regard, Heading 5605 sets out some fairly demanding requirements which the Best Key metalized yarns satisfy. Specifically:

> They must be in the form of "textile yarn or strip or the like of headings 5404 and 5405";

> They must be goods which, save for their metal content, would fall to be classified as textile yarns, or in HTS headings 5404 or 5405)(providing, respectively, for "synthetic" and "artificial" monofilaments of 67 decitex or more); and

> The metal must have been combined to the yarn in one of the forms specified in the heading (i.e., "thread, strip or powder)".

Initially, we stress that Best Key metalized yarns which were the subject of *New York Customs Ruling N187601* meet all of these requirements. They are yarns of a kind specified in Heading 5605 and the metal was combined with the yarn in the form of power. Best Key's yarns thus *prima facie* qualify for classification in Heading 5605, as Customs correctly held in 2011.

The way in which metalized yarns are manufactured, and the purposes for which they are used, have evolved over time. The use of metalized yarns dates back to ancient times, where they were used in the raiment of kings, nobles and persons of status. Historically, the yarn was made by wrapping a metal thread around a textile thread core (often silk), leaving the core partly visible to

enhance the visual appeal of the product. Ancient textiles partially or wholly woven from gold threads were known historically as "*Cloth of Gold*"[5]. References are found on the headstones of Roman noblewomen, and in the Bible [*Psalms* 45:14].

In England, King Henry VII limited the wearing of cloth with gold or metal thread to royalty and high nobility.[6] Gold file' threads were used in numerous garments, and later, lame' fibers would be developed. More recently, new manufacturing methods have allowed for the drawing of metal threads, which are then woven or gimped with textile yarns, the application of metallic powders to the surface of a textile yarn, direct bonding of metal powder to fibers, and, as noted above, in more recent times, through the addition of nanometal particles to a molten plastic or cellulose product, prior to spin-drawing. During the past half century, the predominant metalized yarn used in fashion garments has been "lurex" a product made by bonding fine metal powder between two sheets of transparent or translucent film, and then slitting the film "sandwich" to fiber widths[7].

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5 In ancient Greek mythology, the "Golden Fleece" pursued by Jason and the Argonauts was believed by numerous scholars to be a reference to a metal woven garment, effectively a metaphor for royal power. See, e.g., David Braund, *Georgia in Antiquity:* Oxford: Clarendon Press (1994).

6 See Maria Heyward: *Rich Appeal: Clothing and the Law in Henry VIII's England* (Ashgate Publishing, 2009).

7 Some, by not all types of lurex yarns have a visual characteristic. However, these visual characteristics are typically not imparted by the metal dust used in their manufacture, but from treatments to the plastic laminates used in their production. Thus, the website of Lurex Co., Ltd., the manufacturer of the yarn, indicates that the visual properties of many of their products result from devising laminates which "accept dyes to give sparkle effects, laminated film to give irridescent effects, chemically treated laminates which absorb light to give glow-in-the-dark effects; retro-reflective yarns for sportswear, colour change effects under UV lights and matte antique types."http://www.lurex.com/companyprofile.html (last visited May 19, 2013). The stiffness characteristic of lurex is viewed as a drawback to the use of lurex, and production

Metalized yarns have antibacterial and antimicrobial properties, and are used for a variety of decorative and utilitarian purposes. As noted by one industry source:

> Metalized Yarns – These yarns are either yarn made from thinly drawn metals (gold, silver, nitinol, stainless steel, nickel, etc.) flexible enough to be woven, or yarns that have been metalized through the bonding of a metal to the yarn. Typical examples of metalized yarns are Silver (X- static fiber) or Copper, etc. bonded to nylon. The DuPont Company manufactures a metal clad fiber called Aracon fiber, in which a metal is directly bonded to an aramide fiber. Typical uses for metalized yarns include antimicrobial, static dissipation, shielding from electromagnetic force (EMF), shielding from radiation, shape retention and conductivity.

See Bally Ribbon Mills, *Performance Properties of the Most Frequently Utilized Fibers and Yarns* [copy appended at Exhibit F]. Modern metalized yarns were largely developed to replace some of the metal threads used to make old-style lame′ fabrics, which were subject to yarn and seam slippage.

In the 20th Century, developments in the science of combining yarns with metal continued. A succinct summary of the history of metalized yarn production during the 20th century was provided in *Metal Film Company Inc. v. Metlon Corporation*, 316 F. Supp 96 (S.D.N.Y. 1970), where the Court noted:

> Walter George Scharf went to work in 1916 at the age of seventeen as a gold beater upon the death of his father. Despite the lack of a formal education, he developed exceptional sales, management and technical expertise and was able to make major improvements in gold leafing processing equipment. He remained in this business for over forty years. In 1950 he became interested in metallizing. He started a company called the High Vacuum Metal Company, through which he marketed a yarn composed of metalized Mylar laminated to butyrate. The resultant yarn was used for such products as upholstery in automotive and plane interiors. Perceiving the need for a softer

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efforts have focused on ways to obtain or use new polyester films to soften the fabric. Thus, the Lurex Company Ltd.'s website indicates that development is being conducted on "the new 6-micron film which, for the first time has given Lurex® a name for ultra softness". *Id.*

> material, however, Scharf developed a new laminated metalized Mylar yarn, and formed a company, Metal Film Company, the plaintiff herein, to develop, manufacture and market this yarn. The resultant yarn was a commercial success in its field, but it was still not soft enough a material for use in fabrics that would come in contact with a wearer's skin.

They key was to produce a metalized yarn soft enough to be worn against skin, but strong enough to withstand the various stresses that fabrics are exposed to during the lifetime of a garment or other textile article. As the Court explained:

> Metalized yarns are subjected to still further mechanical and chemical stresses during the lifetimes of the garments or other products, for example, the stresses arising during wearing and during dry cleaning or laundering operations. For a metalized yarn to be useful it must be able to withstand the various chemical and mechanical attacks to which it will be subjected over the life of the product.
>
> Scharf turned to the task of developing such a softer yarn, and came up with a non-laminated metalized yarn, and on June 18, 1956 filed a patent application based on this product.

Metalized yarns are a relatively recent development, the *Metal Film Company* court noted, indicating that periodic improvements had been made in producing such yarns:

> [M]odern metallic yarns were introduced commercially in about 1946 and represented a considerable improvement over the previously available yarns, e.g., the so-called Lame yarns that had been used for many years. **The first important development among the modern yarns was a three-ply structure in which a central layer of aluminum foil was sandwiched between two layers of clear plastic film. The layers were glued together with an adhesive.** The three-ply foil yarn is shown in U.S. patent No. 2,129,504 to Karl E. Prindle, which issued in 1938 to Dow's predecessor, The Dobeckmun Company.
>
> The use of three-ply aluminum foil yarn was limited because fabrics woven or knitted from it were rough. Nevertheless, substantial quantities of three-ply aluminum foil yarns were sold and it is only

> within the last few years (since about 1963) that this type of yarn has declined to an insignificant factor in the metallic yarn market.
>
> * * *
>
> **The second important modern development in metallic yarns was the introduction of "laminated" metalized yarn in about 1955.** Laminated metalized yarn is made by vacuum metallizing the surface of a polyester plastic film and then adhesively bonding another layer of polyester film to the metalized surface to protect that surface.
>
> * * *
>
> The invention of **non-laminated metalized yarn**, which is the subject of this suit, was the **third important development in metallic yarns.** The term "non-laminated" is used because this yarn has only one thickness of Mylar (or other substrate), rather than the three thicknesses of the foil yarns and the two (or more) thicknesses of the laminated metalized yarns, and because it does not need the laminating adhesive required by these two earlier types of yarn.

316 F. Supp. At 98-99 [emphasis added; citations omitted]. As the Court's decision indicates, while laminated "Lurex" yarns (which are still used extensively today in the production of sweaters and other apparel articles) are perhaps the principal metalized yarn in fashion use today, by 1970 they had been eclipsed by new, non-laminate methods for making metalized yarns which used a vacuum-deposition process, rather than adhesive films, to capture metal dust or powder in a textile yarn.

Subsequent developments in the production of metalized yarn have included such things as the creation of DuPont's Aracon fiber, a metalized fiber produced by cladding the company's Kevlar non-woven fibers with metallic substances (nickel, copper and silver in varying amounts). Aracon is widely used as a dielectric and cladding product for coaxial and other electrically conductive wires and cables. See http://araconfiber.com/fiber/. [Last visited May 13, 2014].

Customs' rulings have most commonly dealt with "Lurex" yarns, often used in sweaters and other garments. In the Lurex process, metal in fine powder form is deposited by vacuum deposition on a plastic film. The film, at the time of combining with the metal, is not a textile fiber. However, after the deposition process occurs, the film is slit to form polyester fibers coated with metal. Customs has regularly recognized "Lurex" as being a metalized yarn. See, e.g., *New York Customs Ruling N190399 of February 3, 2012; New York Customs Ruling N200561 of January 27, 2012; New York Customs Ruling N006878 of April 17, 2007; New York Customs Ruling M81880 of April 26, 2006.* [These rulings demonstrate that there is no requirement for a non-metalized textile yarn to exist as such prior to the combination with metal; in the Lurex process, there is no textile material present until the very last step of the production process, when the plastic/metal film composite is slit to a textile width (<5mm)].

More recently, the development of nanometal powders has revolutionized the textile fiber industry, since nanopowders allow metal content to be introduced to textile materials in ways not previously possible. It allows, for example, the electrospinning process described above, and permits Best Key to force polyester and rayon slurries containing metal particles through spinnerets. As explained in a recent technical publication:

> Research is going on around the world to explore the application of nano-materials, nano-finishing, nano-coating, nanofibres etc. to develop innovative new products with significantly improved performance properties and functionality of textile fibers and fabrics. Nowadays nanometals are finding most of the application in the finishing department. They are being used in UV-protection, water repellency, antibacterial activity, antistatic performance, EMI shielding, wrinkle resistance, stain resistance performance, battle dress formation etc., Nano sized materials are able to enhance the physical properties of conventional textiles. In future, the application

of these wonder nano-particles can be extended to produce textiles with health care & self-cleaning function

SS. Chinchwade and Maneet Srivastava, Application of Nanometals in Textiles, Part 1 , Textile Review Magazine, (April 2012), reprinted at www.technicaltextile.net [Last visited May 13, 2013]. This article is appended as Exhibit G hereto.

As noted in Exhibit G, the application of metal nano-particles in textile fiber production is extensive and significant. This is not a situation where "more is better" (in terms of the application of metals), since, as the authors note, "Conventional material have grain sizes ranging from microns to several millimeters and contain several billion atoms each, [while] nanometer sized grains contain only about 900 atoms, exhibit new and improved properties compared to corresponding bulk materials.[8] Functions being performed by nano-particles include anti-bacterial finishing, ultraviolet radiation shielding, self-cleaning fabric development, odor reduction, anti–pollen activity, flame retardant qualities, making functional finishes wrinkle, stain and static resistant, protection against biological and chemical threats, creation of "smart, comfort and medical textiles" and the like. See Exhibit G, p. 4.

Customs' proposed revocation of *New York Customs Ruling N187601* proceeds significantly on the assumption that Best Key's product is not within the "common meaning" of the term "metalized yarn" as used in HTS Heading 5605, and does not have an "essential resemblance" to goods which Customs has traditionally classified in that heading. However, while nanometals may

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[8] The article notes several materials, including elemental metals, compounds and polymers, which could be introduced into textiles as nano-particles. For purposes of these comments, Best Key submits that only elemental metal particles would cause a textile fiber to be classified as a "metalized yarn" of HTS Heading 5605.

not have been known in the 1970s/1980s, when the *Explanatory Notes* to the HTS were drafted, they are certainly known now, and are a commercially and commonly known commodity.

The Explanatory Notes to HTS Heading 5605, prepared by the Brussels-based World Customs Organization (WCO), provide several examples of metalized yarns, and describe some of the various methods by which such yarns are produced. The ENs . . . " are not legally binding, H.R. Conf. Rep. No. 100-576, 100th Cong., 2d Sess. 549 (1988), reprinted in 1988 U.S.C.C.A.N. 1547, 1582, but do "clarify the scope of the HTSUS subheadings and offer guidance in their interpretation." *Franklin v. United States*, 289 F.3d 753, 758 (Fed. Cir. 2002). The ENs, prepared during the 1980s, reflect some of the methods for producing metalized yarns known at that time. They indicate that the Heading *includes, inter alia*:

> (1) Yarn consisting of any textile material (including monofilament, strip and the like and paper yarn), **combined with metal thread or strip**, whether obtained by a process of twisting, cabling or by gimping, whatever the proportion of the metal present.
>
> (2) Yarns of any textile material (including monofilament, strip and the like and paper yarn) **covered with metal by any other process**. [Emphasis added]

Providing another exemplar of goods covered by Heading 5605 of the tariff, the EN also indicates that:

> The Heading also features products consisting of a core of metal foil (generally of aluminum) or of a core of plaster film coated with metal dust, sandwiched by means of an adhesive between the two layers of plastic film[9].

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[9] This will of course be recognizable as the first generation process described in the *Metal Films* case, supra, one which was subsequently replaced by the use of vacuum deposition of metal particles on a plastic substrate. .

The manufacturing techniques described in the ENs are recognizable as those discussed in the *Metal Films v. Metlon* decision, supra. However, the Explanatory Notes only set out *exemplars* of the type of goods which have been considered to constitute "metalized yarns". It is neither an exhaustive or preclusive listing of goods covered by the heading. *See Rubie's Costume Co. V. United States*, 337 F.3d 1350, 1359 (Fed. Cir. 2003) ("Absent a clearer showing of congressional intent, we refuse to import incidental characteristics of the examples in the Explanatory Notes into the headings of the HTSUS.").

The Courts have warned against reading examples in the *Explanatory Notes* as limiting the scope of the actual tariff heading. For example, in *Midwest of Cannon Falls Inc. v. United States*, 122 F. 2d 1423 (Fed. Cir. 1997), the government argued that a provision for "Christmas ornaments" in the tariff should be interpreted as referring to "**hanging** Christmas ornaments", and supported its position with examples from the *Explanatory Notes*. However, the Federal Circuit made clear that the language of the tariff itself was paramount, and that limitations on it would not be inferred from examples given in the Notes:

> The government appears to argue in the alternative that the term Christmas ornament is indeed broader and includes "hanging" ornaments other than Christmas tree ornaments - but is still limited only to Christmas ornaments that are hung from archways, doorways, ceilings, fixtures, window shades, and so forth during the Christmas season. Hence, the government argues that because the imported items at issue are not meant to be hung, they cannot be Christmas ornaments. In support of this argument, the government primarily relies on the examples in the Explanatory Notes to heading 9505, most of which hang from a tree or elsewhere. The examples in the Explanatory Notes, however, cannot control here, particularly in light of the congressional omission of the word "tree." **Absent a clearer showing of congressional intent, we refuse to import incidental characteristics of the examples in the Explanatory Notes into the** headings **of the HTSUS.** See *Marubeni Am. Corp. v. United States*,

35 F.3d 530, 535 n.3 (Fed. Cir. 1994) ("Explanatory Notes are only instructive and are not dispositive or binding.").

In this case, the *Explanatory Notes* describe various methods for producing metalized yarns, but do not purport to give a comprehensive listing of all products covered by the heading, or of the methods by which such goods can be manufactured. Understandably, the *Explanatory Notes* make reference to those technologies for producing metalized yarn known at the time of their drafting. However, they put no limitations on the methods by which a "metalized yarn" of Heading 5605 may be produced.

Attached at Exhibit H is the *Affirmation of Professor Ingrid Johnson*, the Assistant Chairperson in the Textile Development & Marketing Department and Acting Associate Chairperson in the Home Products Department at the Fashion Institute of Technology (FIT) in New York City. Professor Johnson is also an editor of the authoritative *Fairchild's Dictionary of Fashion* , whose 7th Edition is forthcoming. As noted in her Affirmation, metalized yarns such as those produced by Best Key, in which metal nanopowders are bonded to synthetic fibers in the manufacturing or finishing process, are well known in United States commerce and industry. She not only offers her expert opinion that Best Key's metalized yarns are within the definition of the term "metalized yarns", but also indicates that the forthcoming edition of Fairchild's, which has repeatedly been found influential by the United States Court of International Trade, will reflect broader definition of the term "metalized yarns" to more accurately reflect the multiplicity of methods in which such yarns may be manufactured.

## 2. <u>An Eo Nomine Provision of the Tariff Covers All Forms of the Named Article</u>

HTS Heading 5605 is an *eo nomine* provision of the tariff, that is, one which covers an article by name. It covers all "Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of Heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal". The products covered by *New York Customs Ruling N187601* clearly are textile yarns which have been "combined with metal in the form of . . . powder[10]". They fall expressly within the language of the heading.

While the powder is added to the instant yarns in the polyester matrix, rather than being applied through a process of spray-coating or vacuum deposition, this is of no moment under the language of the tariff. The tariff only specifies the forms in which the metal is to be combined with yarn ("thread, strip or powder or covered with metal"), and not the process by which combination occurs. The Best Key process, by distributing the metal throughout the mass of the yarn, helps protect the metal from being depleted from the yarn during use. As noted in the *Metal Film Company Inc. v. Metlon Corporation* decision, supra, "Metalized yarns are subjected to still further mechanical and chemical stresses during the lifetimes of the garments or other products, for example, the stresses arising during wearing and during dry cleaning or laundering operations. For a metalized yarn to be useful it must be able to withstand the various chemical and mechanical attacks to which it will be subjected over the life of the product." Where metal powders are applied to a yarn by a process of coating or vacuum deposition, the metal is all on the exposed surface area of the yarn,

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10 Since Best Key's nanopowders clearly meet the HTS' definition of "powder", as set out in Note 8(b) to HTS Section XVI, their status as such is beyond question.

immediately subject to abrasion and to removal by chemical or mechanical stresses. In the Best Key process, however, the metal is uniformly dispersed through the fiber matrix, allowing for greater durability and greater resistance to mechanical and chemical stresses. The process represents an improved method for creating a metalized yarn in which the textile (polyester) component is combined with metal powder.

Customs rulings have confirmed that "a yarn that contains **any amount of metal** is considered in its entirety as a "metalized yarn" for tariff purposes". See, e.g., *New York Customs Ruling J82790 of April 3, 2003*. In determine whether a yarn is a "metalized" yarn, Customs does not consider the weight of the metal, but whether the yarn contains *any* metal. See, e.g., *New York Customs Ruling L86561 of August 8, 2005; New York Customs Ruling N034758 of August 15, 2008; New York Customs Ruling F83891 of March 7, 2000.*

As the *Explanatory Notes* indicate, Heading 5605 covers yarns combined with metal, "whatever the proportion of the metal present". The verb "combine" is defined as:

> To bring into a state of unity; merge. To join (two or more substances) to make a single substance, such as a chemical compound; mix.

See *The Free Dictionary.com.* It also means:

> 1.a To bring into such close relationship as to obscure individual characters.

*The Merriam-Webster Dictionary*

As Customs correctly recognized in *New York Customs Ruling N187601 of October 25, 2011,* the Best Key yarns in question are textile yarns which have been "combined" with metal powder. The yarns thus, *prima facie* qualify as metalized yarns of Heading 5605.

*Eo nomine* provisions of the tariff cover all forms of the named article, including new forms not known to science or commerce at the time the tariff schedules were drafted or adopted. As noted in *Borneo Sumatra Trading Co. Inc. v. United States*, 311 F. Supp. 326, 338-39 (Cust Ct 1970), tariff acts are written for the future as well as for the present, and encompass new forms of articles. See also *NEC America Inc. v. United States*, 8 CIT 184, 186, 596 F. Supp. 466, 468 (1984), *aff'd*, 760 F.2d 1295 (Fed. Cir.1985). Absent demonstrated intent to the contrary, an eo nomine provision includes all forms of the named article. See *NEC America, supra*; see also *Avecia, Inc. v. United States*, 30 CIT 1956, 1971, 469 F. Supp. 2d 1269, 1283 (2006). Customs has noted, that, in the absence of this rule, newly-developed versions of articles named in the tariff schedule would be classified in "basket" provisions of the tariff, rather than under provisions which expressly describe them. See, e.g., *Customs Headquarters Ruling 086626 of January 15, 1991; Customs Headquarters Ruling W967058 of April 21, 2006.*

Accordingly, Customs ruled correctly in *New York Customs Ruling N187601* when it stated that:

> . . . the aluminum or zinc powder is added to the slurry that is extruded to create the filaments. For tariff purposes, a yarn combined with metal in the form of powder is considered a metalized yarn.

HTS Heading 5605 imposes no limitations or conditions on the manufacturing method used to combine metal powder with a man-made fiber yarn. It is enough that metal is added in powder form and that the product, in its condition as imported, is a textile yarn, or a synthetic or artificial fiber strip or monofilament – condition which, Customs admits, are present here.

Classification of Best Key's yarns under HTS subheading 5605.00.9000 was correct, as a matter of law. The agency's proposed revocation of that ruling is not in accordance with law.

### 3. Best Key's Metalized Yarns Bear an "Essential Resemblance" to the Articles Described in HTS Heading 5605

Customs' proposed revocation of *New York Customs Ruling N187601* admits that the uniqueness of the Best Key process does not remove its metalized yarns from the scope of HTS Heading 5605. The agency questions, however, whether Best Key's product bears an "essential resemblance" to the articles described by the heading:

> CBP has held in the prior rulings that tariff terms are written for the future as well as the present, which means that tariff terms are expected to encompass merchandise not known to commerce at the time of their enactment, as long as the new article possesses an essential resemblance to the one named in the statute.

Customs then suggests that Best Key's metalized yarns do not bear an "essential resemblance" to the metalized yarns of Heading 5605. The agency's proposed revocation provides the following reasons:

> Best Key's metalized yarns do not comport to the "common and commercial" meaning of the concept "metallized fibers" as defined by agencies such as the Federal Trade Commission;

> Selected "technical sources on metalized yarn noted that metallic yarns consist of pre-existing yarn or plastic film bonded to metal";

> Best Key's competitors, represented by domestic organizations such as "American Fiber Manufacturers Association and the National Council of Textile

Organizations were in agreement that the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn.:

> Best Key's yarns look and feel like regular polyester yarns and do not have "a distinctive metallic appearance" which promotes its "popularity for decorative applications"; and

> Adding metal for antistatic or other purposes before extrusion of yarn is not a new process; and

> None of the exemplars in the Explanatory Notes to HTS Heading 5605 describe a product in which the metal is not "visually apparent".

None of these points have any legal or factual validity, and Best Key herein address them in turn.

**A. <u>The "Essential Resemblance" Requirement</u>**

As Customs noted in its proposed revocation notice, a tariff provision will encompass a future-developed version of a product if the product bears an "essential resemblance" to the goods (or, where applicable, exemplars) identified in the tariff heading. The "essential resemblance" test requires an inquiry into whether the new product satisfies the criteria for classification in the particular heading, whether the heading classifies *eo nomine* or by use.

Thus, in *United States v. Standard Surplus Sales Inc.*, 69 CCPA 34, 40 (1981), the Court of Appeals was called upon to determine whether certain backpacks, used in the sport of backpacking, fell within the definition of "luggage" as set out in the tariff. The court noted that:

> To be classified within a specific tariff provision, it would be sufficient if the new article possessed "an essential resemblance to the former [exemplars] in those particulars **which the statute established as the criteria of the classification.**"

citing *Klipstein v. United States*, 4 Ct. Cust. Appls 510, 514 T.D. 33936 (1913). Similarly, in *United States v. Texas Instruments, Inc.*, 67 CCPA 59, 620 F.2d 269 (1981), the Court of Appeals ruled that an integrated circuit used to manufacture electronic watches did not have an "essential resemblance" to "watch movements" as provided in the tariff. The court noted that "the required essential resemblance is to those characteristic established by the [tariff schedule] as **the criteria of classification**", citing *Davies, Turner & Co. v. United States*, 45 CCPA 39, 41-42 (1957). While the meaning of individual words is as they were understood at the time of tariff enactment, *id.*, the tariff provision under consideration fairly embraces all future-developed goods which meet its terms[11].

Thus, the "essential resemblance" test on which Customs relies for its proposed revocation begins and ends with the language of the tariff itself.

HTS subheading 5605.90, under which Customs correctly classified Best Key's products in New York Customs Ruling N187601, provides for:

> 5605 Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of Heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal . . . .

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[11] Where the tariff provision in question is one which classifies by use, the "essential resemblance" test is determined by whether the later-developed article has the same use as identified in the tariff provision. See, e.g., *United States v. Consol. Int'l Equipment & Supply Co.*, 8 CCPA 145 (1971)(holding a "step-setting machine" to be within a tariff provision for typesetting machines because it performed the function of typesetting); see also *Lanston Int'l v. United States*, 49 CCPA 123 (1962)(test is whether the machine is designed to "carry out a process" identified in a "use" tariff provision).

HTS Heading 5605 is not a "use" provision of the tariff, but as noted *infra*, Customs incorrectly seeks to apply use principles in its "essential resemblance" analysis.

5605.00.90 Other[12].

The provision incorporates its own definition of what is a metalized yarn. The requirements for classification as a metalized yarn, and the ways in which the Best key product meets each requirement, can be summarized below:

[12] It is unquestioned that Best Key's metalized yarn is not classifiable under HTS item 5606.00.10, which covers " Metal coated or metal laminated man-made filament or strip or the like, ungimped, and untwisted or with twist of less than 5 turns per meter

| Statutory Requirement | Best Key Yarn Characteristic |
|---|---|
| "... whether or not gimped or ungimped . . . " | Best Key metalized yarn is not gimped. |
| " . . . being textile yarn, or strip or the like of Heading 5404 or 5405 . . . | Best Key's metalized polyester yarn is "a textile yarn". Furthermore, the metal is added at the time monofilaments are extruded):: |
| " . . . combined with metal . . . "" | Customs concurs that Best Key's yarns are combined with metal. |
| " . . . in the form of thread, strip or powder or covered with metal." | Best Key's metalized yarns are combined with metal in the form of powder. The definition of metal powder, for tariff classification purposes, is found at Note 8(b) to Section XV of the HTS, and covers "Products of which 90 percent or more by weight passes through a sieve having a mesh aperture of 1 mm.", indicating that the nanopowders used in the Best Key process were within the Congressional understanding of what constituted a metal powder at the time the tariff was enacted. |

If, as the courts have held, the "essential resemblance" requirement is to be judged based on the requirements of the tariff provision in question, the inescapable conclusion is that Best Key metal yarns of the kind described in *New York Customs Ruling N187601* fall squarely within HTS Heading 5605.

With these general observations in mind, we now consider Customs' specific reasons for asserting that Best Key's metalized yarn does not have an "essential resemblance" to the goods of HTS Heading 5605.

## B. Customs Reliance on Other Agency Definitions is Misplaced

Customs first asserts that Best Key's yarns are not within the common meaning of the term "metalized yarns" as it appears in Heading 5605 because they do not comport with the Federal Trade Commission (FTC) definition of "metallic" fiber **as** "A manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal.", citing 16 C.F.R. § 303.7.

The FTC definitions do not govern "common meaning" for tariff purposes, for many reasons. First, the definitions are not part of a system of classification, nor do they purport to have rules for their interpretation. Second, the rules are frequently amended to include newly-developed fibers, and include not only generic, objective descriptions, but also trade names as well. They may be amended on application. See, e.g., 67 Fed. Reg. 4901 (February 1, 2002) (amending the rules to add a definition of "PLA"); 62 Fed. Reg. 28342 (May 23, 1997)(amending the regulation to add a definition of "elastoether"). Third, the current FTC regulatory definition of "metallic" fiber dates from 1959, a generation prior to adoption of the Harmonized System tariff, and cannot possibly reflect the intent of the drafters at the time the HTS was enacted into law.

Moreover, other agency definitions do not govern the determination of the "common meaning" of a tariff term for Customs purposes. In *Bestfoods v. United States*, 28 CIT 1053 (2004), the Court of International Trade considered the classification of a "low fat peanut butter spread" comprised 60% of peanuts and the remainder of corn syrup, oils, and other non-peanut materials. Asserting that the product could not be classified as "peanut butter", the plaintiff claimed that because the Department of Agriculture had promulgated a mandatory "Standard of Identity" for

“”peanut butter”, which prohibited such goods from containing more than 10% of non-peanut materials, the plaintiff urged that the FDA definition must perforce establish both the common meaning and commercial designation of “peanut butter” for tariff classification purposes. After all, the plaintiff noted, the subject goods could not lawfully be marketed as “peanut butter” in the United States. The CIT disagreed, holding:

> . . . one of the purposes of FDA standards of identity "is to promote honesty and fair dealing in the interest of consumers by truthful and informative labeling of food products" and also that such standards are "helpful in defining a product but . . . **not controlling in determining [its] classification . . . under the H[TSUS]**." See, e.g., *Nestle Refrigerated Food Co. v. United States*, 18 CIT 661, 666 (1994)("FDA standards of identity are not controlling for tariff classification purposes"), citing *Charles Jacquin et Cie v. United States*, 14 CIT 803 (1990); *Alexandria Int'l, Inc. v. United States*, 13 CIT 689 (1989); *Joseph F. Hendrix v. United States*, 82 Cust.Ct. 264, C.D. 4809 (1979). Cf. *United States v. Mercantil Distribuidora, S.A.*,43 CCPA 111, 116-17, C.A.D. 617 (USDA regulation interpreting meaning of "cured beef" not binding for tariff purposes); *Amersham Corp. v. United States*, 5 CIT 49, 56, 564 F.Supp. 813, 817 (1983), aff'd, 728 F.2d 1453 (Fed.Cir. 1984)(rules and regulations to protect public safety not determinative of tariff classification disputes). Indeed, as pointed out at the beginning hereof, the HTSUS subheading under review provides for peanut butter and paste *eo nomine,* which kind of provision has long been understood to encompass all forms of the substance within that nomenclature.

*See id.* at 1058 [emphasis added, footnotes omitted]. The Court noted that the Bestfoods product at issue could not lawfully be labeled as “peanut butter” nor offered for sale in the United States under that name, by virtue of the FDA regulation. But that did not override the rule of tariff construction that an eo nomine provision (in that case, for “peanut butter”) covered all forms of the named product, including “reduced fat peanut butter”).

Similarly, in this case, it would be improper for Customs to try to substitute the FTC definition of "metallic fibers" for the statutory elements defining "metalized yarn" (a different phrase) in HTS Heading 5605. Certainly, the elements of the FTC definition of that phrase cannot be used to gauge whether Best Key's yarns bear the "essential resemblance" to the goods covered by Heading 5605[13].

### C. **That Selected Technical Sources Define "Metalized Yarn" as Consisting of Pre-existing Yarn or Plastic Film Bonded to Metal Is Not Dispositive**

Customs' citation of various industry and technical sources for definitions of metalized yarn, similarly, cannot substitute for the conditions of classification in determining whether Best Key's metalized yarns have the "essential resemblance" to the goods identified in HTS Heading 5605.

Initially, the definitions offered by Customs are themselves inconsistent. For instance, "Metallic Fibers" by Anita A. Desai, defines a metallic yarn as "a continuous flat monofilament produced by a combination of plastic film and metallic component so that the metallic component is protected." This is clearly a reference to "lurex", the most common metalized yarn currently known to commerce. [It should be noted that, in the lurex production process, plastics (HTS Chapter

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[13] Indeed, in the textile area, the FTC uses stricter test to determine when a product may be labeled as "Made in USA" (see Federal Trade Communication, *Guide to Complying With the Made in the USA Standard*) than Customs uses to determine whether an imported good is a product of a foreign country, see 19 U.S.C. §3592, 19 C.F.R. §102.21. Arising as it does from a different statutory grant of authority, the FTC rule is of no moment in construction of the Customs laws.

The FTC Guide as available for viewing or download at http://business.ftc.gov/documents/bus03-complying-made-usa-standard (last visited May 19, 2013)

39) are combined with metals (HTS Section XV) and no textile product emerges until the combination is slit to "fiber" widths, which puts paid any notion that HTS Heading 5605 requires the prior existence of a non-metalized textile fiber][14]. On the other hand, the International Bureau for the Standardization of Man-Made Fibres further notes that "'metalized' yarns are yarns coated with metal", obviously a reference to a totally different product, with no plastic being mentioned, and no apparent "protection" for the metal component. Which definition, then, embodies the "common meaning" of "metalized yarn" for purposes of HTS Heading 5605? Or is it possible that both types of yarns fall into the tariff definition of metalized yarns?

Indeed, reference to the Explanatory Notes to HTS Heading 5605 indicates that both types of yarns in these definitions are covered by HTS Heading 5605. Customs' proposed revocation already concedes that the method by which metalized yarns are produced is not germane to its classification. Indeed, as the Explanatory Notes indicate, "metalized yarns" can be produced by a great many methods, such as gimping man-made fiber yarn with thread or strip, twisting, cabling, application of metal (in whatever form) by electrodeposition, by the use of adhesives, or parallel metalized yarns held together with various materials. Moreover, the tariff definition of "metalized yarns" covers metals with any proportion of metal present, even if the metalized filaments are combined with non-metalized filaments. This is through application of Note 2(b)(A) to HTS Chapter XI, which creates an exception to the normal "chief weight" rule of tariff classification for textile materials, and which provides that:

> (a) Gimped horsehair yarn (heading 5110) and metalized yarn (heading 5605) are to be treated as a single textile material the weight

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[14] The *Explanatory Notes* to HTS Heading 5605 specifically reference the lurex manufacturing process.

of which is to be taken as the aggregate of the weights of its components; for the classification of woven fabrics, metal thread is to be regarded as a textile material;

It is unlikely that the sources cited by Customs anticipate this special rule of classification which attends under the HTS to the classification of "metalized yarns" of Heading 5605. Nor has Customs contended that the industry sources it cites are exclusive; as noted in this submission, other industry sources recognize the growing use of nanometals in textile production. Customs has cited no precedent in which a Court referred to industry or trade publication articles to determine whether goods bore an "essential resemblance" to the goods covered by a given tariff heading. There is no basis for Customs (or a reviewing court) to do so now. Customs' citation to literature does not establish that Best Key's yarns do not bear an "essential resemblance" to the goods identified in HTS Heading 5605.

### D. Comments from Competing Domestic Trade Associations are Neither <u>Binding Nor Persuasive</u>

Next, Customs asserts that domestic organizations representing Best Key's competitors, such as the American Fiber Manufacturers Association (AFMA) and the National Council of Textile Organizations (NCTO) were of the opinion that "the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn." Obviously, without some citation to a source document, or even a source individual providing the information, this assertion cannot be given weight (and certainly would receive no deference by any reviewing court).

However, when one consults the "Fiber Tutor" on the AFMA's website, one finds numerous definitions of "metallic" yarn. There is a reference to the first commercial production of metalized yarn in 1946 by the Dobeckmun Company, and a note that "metalized yarn is not produced in the United States" (suggesting that AFMA's members have little expertise in the field). The FTC definition of "metallic" fiber is reproduced, and the Fiber Tutor site then notes, with respect to "Basic Properties of Metallic Fiber Production"[15], that "**In the more common process for production**, aluminum foil is coated on one or both sides with adhesive to which the desired coloring matter has been added. A sheet of transparent plastic film is then applied to each side of the adhesive coated foil. The assembly is then slit into narrow widths." http://fibersource.com/f-tutor/metallic.htm (last visited May 14, 2013).

Interestingly, this describes a process not described by the other definitions to which Customs has resorted. It also indicates that this is only the "most common" process for producing metalized yarns and that many other processes exist.

The National Council of Textile Organizations, a self-described "lobbying group", rather than an industry or standards association, and its website proclaims a policy of pursuing protectionism. http://www.ncto.org/tradejobs/index.asp (last visited May 14, 2013). Its website contains no definitional information, indicating that it does not have any authoritative weight in defining textile terms.

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[15] It bears repeating that what a trade association may consider a "metallic fiber" may not comport with what HTS Heading 5605 considers a "metalized yarn". For instance, a cotton yarn gimped with a metal thread might qualify as a "metallic fiber" in industry parlance, but would not be considered a metalized yarn for tariff purposes (since it would not be a yarn of HTS Heading 5404 or 5405).

Obviously, the unidentified trade association "agreement" on the supposed meaning of the term "metalized yarn" has no weight in this case, and certainly the views of these organizations do not define the test for "essential resemblance".

**E. Neither the Appearance Nor Uses of Metalized Yarns Are Germane to Their Classification**

Customs next observes that " the fiber combined with metal in the process used by Best Key looks and feels like a standard polyester fiber, as does the resulting fabric." Precisely so. That is one of the key features of the innovation, that Best Key has managed to create a metalized yarn for fashion purposes which does not have the rough, scratchy texture of lurex or similar yarns made from plastic foils[16]. But that is hardly germane to the classification at hand.

There is absolutely nothing in HTS Heading 5605, nor the Explanatory Notes thereto, which discusses how a metalized yarn should "look" or "feel". Indeed, since the Explanatory Notes to Heading 5605 make it clear that metalized yarns are included in the heading regardless of the proportion of the metal present, and Customs often classifies as "metalized" yarn items containing 1% or less by weight of metal. *New York Ruling Letter N062518 of June 3, 2009* (yarn with 1% metal classified under 5605.00.90); *New York Ruling Letter N228815 of April 5, 2013* (1% metallic decorative cord);*New York Ruling Letter N159135 of April 20, 2011* (cotton yarn with 1% metal classified under 5605.00.90). We have appended at Exhibit I a chart of rulings in which Customs has clarified that any amount of metal in a yarn renders it classifiable as a "metalized yarn" of

[16] As noted *supra*, obtaining a smoother, less scratchy metalized textile yarn is a long-standing goal of lurex producers, who are currently working with 6-micron film substrates toward this end.

Heading 5605. One would not expect yarns with such a small amount of metal to have a metallic feel (indeed, the scratchiness in lurex is a byproduct of the plastic film used in its production, not its metal content).

Nor do the tariff or the Explanatory Notes say anything about how a metalized yarn fiber (or cloth made therefrom) should "look". Customs asserts that metalized yarns "have a distinctive metallic appearance,( hence its popularity for decorative applications)", but this is not the case. First, HTS Heading 5605 is not a "use" provision. While some metalized yarns, or goods made therefrom, may be used for decoration, this is certainly not true, for example of protective garments which use metal powders to impart antimicrobial or UV-shielding applications. Indeed, Customs has repeatedly classified as "metalized' yarns a variety of products where the metal had no visual impact whatsoever and where, as here, the metal was added for a functional purpose. These rulings are summarized in the table below:

| | Ruling Number | Wording Description | Remark |
|---|---|---|---|
| 1 | **NY N062518** | **metal wire has a reinforcing, rather than a decorative, purpose** | **Reinforcing Purpose** |
| 2 | **NY B89128** | **The wire is at the core of these cords and provides stiffness.** | **Provide Stiffness** |

| | | | |
|---|---|---|---|
| 3 | NY B89130 | The core of each cord consists of cotton with wire added for stiffness, while the outer covering is of metalized yarns. | Provide Stiffness |
| 4 | NY L82752 | Shaped for decorative purposes. | Shaped for decorative purposes |
| 5 | NY J84177 | Each strand, or ply, has a thin wire in it allowing the cord to be shaped for decorative purposes. | Shaped for decorative purposes |
| 6 | NY J84274 | The wire allows the cord to be bent to shape; the wire itself is not decorative. | Shaped for decorative purposes |
| 7 | NY A89028 | The wire core serves a decorative purpose by enabling one to shape the yarn in a desired way. | Bent to shape, wire itself not decorative. |
| 8 | NY R00713 | Used in tying wrapped presents. | Tying |
| 9 | NY J82793 | They are the type of fancy cord used to wrap gifts and for similar uses. | Wrap gift |
| 10 | NY I80137 | Decorative packaging and arts and crafts applications. | Decorative packaging |
| 11 | NY A88665 | Yarn which consists of one metallic strip around which is wrapped two nylon monofilaments. | Not shiny or metallic |

| | | | |
|---|---|---|---|
| **12** | **HQ 964997** | **Typical applications for tinsel conductors include decorative and electrical, and medical, telecommunications, robotics, voice coil lead wire for shaver cord, hearing aid cords and microphone receiver cords, spiraled flexible cord** | **Not shiny or metallic<br><br>Tinsel conductor** |

Here again, if HTS subheading 5605 were a "classification by use" provision of the tariff, the use of the product might be relevant for the "essential resemblance" analysis Customs is purporting to conduct. It is not, however, and Customs errs by trying to impute requirements of "look" or "feel" to the goods of that heading.

The table above refutes Customs' argument that metallic yarns, and fabrics made therefrom, typically have a metallic appearance, and puts paid the notion that metalized yarns must have some appearance characteristics related to their metal content. Indeed, as noted supra *when* discussing information on the Lurex Corporation's website, visual features associated with "lurex" yarns are often not the product of the metal content, but come from using "accent dyes" on the polyester film, using irridesent lamination, or treating the plastic laminates with chemicals or imprinting "matte"-type services.

As for Customs' observation that the amount of metal in Best Key's yarns is small and must be detected by laboratory testing, this is true of virtually all metalized yarns. Indeed, it is Customs' unwavering practice to send for laboratory testing all samples of metalized yarn apparel submitted for a ruling, even if composed of lurex, which supposedly has a "visible metallic" aspect (according to Customs). The need for laboratory testing in all cases refutes the notion that the presence of metal can be detected from a visible aspect.

**F. That Metal Powder Can be Added to Fibers for Antistatic Purposes is Not Relevant in this Context.**

Customs notes that the addition of metal to a polyester slurry for antistatic purposes is not a new process. This is true, nor are fibers so made classifiable under HTS subheading 5605. The Explanatory Notes to the heading indicate that the heading does not include "Yarn composed of a mixture of textile materials and metal fibres conferring on them an antistatic effect."

However, this exclusion does not apply to Best Key metalized yarns. The laboratory report submitted with the company's initial ruling request [See Exhibits D,E] indicated that Best Key's metal yarn had no significant antistatic properties.

We note, as an introductory matter, that HTS Heading 5605 merely requires the presence of metal in one of the identified forms in the fiber; it does not require that the metal perform a specific function. [This should be contrasted, for example, with the rules for classification of plastic-coated textile fabrics, which require the coating to have some visible or significant effect on the fabric].

Moreover, the Best Key metal yarns do not use metal powder for antistatic purposes. The typical material used in antistatic fibers and fabrics is a microns-thin stainless steel fiber. Antistatic applications require the high electrical conductivity of stainless steel, and they also require the directional length of a fiber, so that electricity resulting from static buildup can be safely brought to ground. These types of fibers are used in petrochemical and other industrial applications, in order to remove ignition sources resulting from static buildups. These types of fibers are also extensively used in antistatic carpeting applications.

Metal nanopowders of the kind used in Best Key's metalized yarns have neither the conductivity nor directional matrix needed to ground static discharge, and cannot be used for that purpose. Rather, their metals impart antimicrobial and UV-protection characteristics. Such characteristics do not fall within the exception for antistatic fibers.

**4. Customs' Proposed Revocation of *New York Customs Ruling N187601 of October 25, 2011* is Arbitrary and Capricious, and Arises from Improper Motivations**

Finally, Best Key is constrained to point out that Customs' proposed revocation of *New York Customs Ruling N187601* is arbitrary and capricious, and the result of apparent irregularities on the part of Customs' National Commodity Specialist Staff and the New York Customs Laboratory. Indeed, as discussed herein, the proposal to revoke *New York Customs Ruling N187601* had its genesis in an improper collaboration between this two offices to misrepresent and misreport the result of laboratory tests performed on garments made with the Best Key metalized yarn that was the subject of *N187601*.

The yarn classified under 5605.00.9000 by Customs in *New York Ruling Letter N187601,* was used to create the Johnny Collar garment which was the subject of *New York Customs Ruling N196161 of April 13, 2012*[17]. Best Key commissioned an independent laboratory to test the yarn to determine that it contained the requisite metal before submitting a ruling request for a tariff classification. [A copy of the ruling request is appended at Exhibit J] The lab, Vartest Laboratories, found that the yarn contained 2700ppm of aluminum distributed evenly throughout the polyester

[17] Customs has proposed to revoke this ruling, acknowledging that the Customs Laboratory's testing report was incorrect.

matrix.[18] See Exhibit K. The Vartest report used an energy dispersive x-ray analysis, performed in accordance with governmental testing standards. The test revealed the distinct presence of aluminum in the yarn.

Similarly, the Customs' Laboratory also found aluminum present in the yarn.[19] The lab was charged by a National Import Specialist (NIS) with, *inter alia*, determining "the amount of metal in the yarn" and "if possible, the type of metal found" [Exhibit L]. The laboratory test, performed using CBP Laboratory Test Method CBPL-25-01 (apparently based on or equal to ASTM E1621] found peaks of "bromine, titanium, ruthenium, vanadium and silicon". [See Exhibit M] What the Laboratory Report does not say, but which is clear from Attachment 8 to the report, is the presence of a very pronounced peak at the energy dispersive wavelength for aluminum. Indeed, three (3) separate analysis charts incorporated in said Attachment 8 show a distinct peak at the aluminum wavelength [Exhibit N].

Laboratory Notes appearing at Attachment 9 to the report indicate, however, that, in performing the test, Customs was not interested in obtaining objective evidence of the presence of metal, but rather in a result-oriented exercise designed to allow a National Import Specialist (NIS) to argue for the revocation of a ruling. A Significant Contact Report [Exhibit O] filed by an analyst from the Customs Laboratory stated:

> I called NIS Mary Ryan today to discuss a Metallic Yarn fabric sample. [Deleted material} Marybeth Dunaski and William Raftery were all present at the time of the conference. I informed Mary Ryan

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18 Test Results, Vartest Laboratories. December 1, 2011..

19 See Verification 2-13-12. obtained under the Freedom of Information Act.

that in my opinion the submitted sample is not of "metallic yarn"[20]. She agreed with me. I mentioned to her about ruling Number 187601 which considered this type of yarns "metallic yarn". **Mary told me that the purpose of the sample (NY 20120156) is to request HQ to reverse the ruling published in ruling number N187601 based on the laboratory report NY 20100156 (sic), therefore, I should disregard Ruling #N187601 while writing laboratory report. It was also decided that the laboratory report number NY 20120156 will only state that the sample is wholly of polyester.**

This a remarkable statement which suggests a deliberate attempt to falsify and skew the Customs Laboratory's report. Not only was the Laboratory told to disregard **New York Customs Ruling N187601** which, then and now, represents the "official position of the Customs Service, which is "binding on all Customs Service personnel." See 19 C.F.R. §177.9(a).[21] The Laboratory personnel deliberately disregarded published ruling precedent which was binding on them. Moreover, NIS Ryan and the Laboratory personnel apparently connived to mis-represent the results of the Customs Laboratory test, deciding "that the laboratory report number NY 20100156 **will only state that the**

[20] One questions the value of a legal opinion voiced by a laboratory analyst, whose job is merely to find facts.

[21] Section 177.9(a) of the Customs Regulations provides in pertinent part:

**§ 177.9 Effect of ruling letters.**

(a) Effect of ruling letters generally. A ruling letter issued by the Customs Service under the provisions of this part represents the **official position of the Customs Service** with respect to the particular transaction or issue described therein and is **binding on all Customs Service personnel** in accordance with the provisions of this section until modified or revoked. In the absence of a change of practice or other modification or revocation which affects the principle of the ruling set forth in the ruling letter, that principle may be cited as authority in the disposition of transactions involving the same circumstances.

**sample is wholly of polyester."** Thus, the laboratory report issued for that garment, which neglected to mention the presence of any metal, was not only false, but intentionally so.

As if mis-stating a conclusion was not bad enough, it appears that the Laboratory personnel were also induced to misrepresent their factual findings, deliberately omitting any reference to the aluminum content of the yarns which made up the product, notwithstanding that the Customs laboratory's report clearly showed the presence of significant aluminum, and corroborated the Vartest laboratory results in this regard.

Another *Significant Contact Report*, [Exhibit P] evidences a subsequent contact between the laboratory analyst and NIS Ryan 3 days later, and contains the cryptic statement "Mary Ryan confirms to test the sample **without answering all the questions**", presumably about metal content of the yarns. To answer those questions truthfully would expose the initial fabrication, of course.

Without ascribing motivations, it is clear that, at a minimum, this behavior by Customs personnel is extremely disturbing and calls into question the integrity of the rulings process and of the conduct of the Customs Laboratory. If an NIS wished to have *New York Customs Ruling N187601* reconsidered or revoked, that official had established channels within the agency to use for the purpose. There was no need to falsify a laboratory report, which, in turn, led to the issuance of an incorrect Customs ruling (which Customs has now agreed to revoke). Best Key has suffered millions of dollars in lost business opportunities as a result of the improper ruling, and has incurred many thousands of dollars in legal fees and costs to have the ruling set aside and things put right. None of these losses would have occurred had Customs personnel performed their jobs honestly and according to established procedures.

To pursue a revocation of *New York Ruling N187601*, as Customs Headquarters has done, is to not only forgive the irregular action of its NIS and Laboratory personnel, but to reward it. This is particularly true since, as noted above, the proposed revocation is contrary to every rule of law governing the interpretation and enforcement of the tariff provision in question.

According to the *Explanatory Notes* and language of Heading 5605, the presence of aluminum in the garment which was the subject of *New York Customs Ruling N196161* transforms what would be polyester yarn, into metallic yarn classified under Heading 5605. Curiously, the *Explanatory Notes* appear as Attachment 10 to the Customs Laboratory report, so the laboratory was clearly aware of it. However, for reasons unknown, Customs, in issuing its ruling disregarded both laboratory tests and concluded that the fabric was wholly composed of polyester yarn. Although the yarn may have been composed in chief weight of polyester, the fact is that the presence of the metal changes its classification, and causes fabric composed of the yarn to be treated as "other fabrics". See, e.g., *New York Customs Ruling N206236 of March 1, 2012; New York Customs Ruling N181240 of February 28, 2012; New York Customs Ruling N171762 of February 3, 2012; New York Customs Ruling N187437 of January 20, 2012; New York Customs Ruling N183198 of January 19, 2012.*

We have detailed above the reasons why Customs' proposed revocation is not in accordance with law. However, given the above history of Customs officials seeking to have New York Customs Ruling N187601 revoked through false premises, and this misconduct having been brought to the attention of senior Customs officials, we can only state that in proceeding with the revocation – after admitting the presence of metal in the yarns – is arbitrary and capricious as well.

## V. CONCLUSION

From the above, it follows that there is no basis in law or fact for revoking or modifying *New York Customs Ruling N187601 of October 25, 2011*. Customs proposed revocation is not supported by evidence on the record, is arbitrary, capricious and not in accordance with law.

Customs should vacate and withdraw its proposal to revoke this ruling.

Please contact undersigned counsel if there are any questions, or if additional information is required.

Very truly yours,

John M. Peterson
Maria E. Celis
Elyssa Emsellem
NEVILLE PETERSON LLP
Counsel for Best Key Textiles Ltd.
17 State Street
New York, New York 10004
(212) 635-2730
(212) 635-2734 (Fax)
Jpeterson@npwny.com

May 17, 2013

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT A

N187601

October 25, 2011

CLA-2-56:OT:RR:NC:N3:351

CATEGORY: Classification

TARIFF NO.: 5605.00.9000

Ms. Margaret Polito
Attorney-at-Law
222 Riverside Drive, Suite 14E
New York, NY 10025

RE: The tariff classification of metalized yarns from China

Dear Ms. Polito:

In your letter dated October 3, 2011, you requested a tariff classification ruling on behalf of your client, Best Key Textiles Limited of Shenzhen, China.

You submitted two spools of a product you describe as polyester filament yarn, one of which you state is combined with aluminum powder and the other, zinc powder. Both, you state, contain titanium.

You state that the aluminum or zinc powder is added to the slurry that is extruded to create the filaments. For tariff purposes, a yarn combined with metal in the form of powder is considered a metalized yarn.

The applicable subheading for the metalized yarn will be 5605.00.9000, Harmonized Tariff Schedule of the United States (HTSUS), which provides for metalized yarn, whether or not gimped, being textile yarn, combined with metal in the form of thread, strip, or powder or covered with metal; Other. The general rate of duty will be 13.2% ad valorem.

Duty rates are provided for your convenience and are subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided on the World Wide Web at http://www.usitc.gov/tata/hts/.

This ruling is being issued under the provisions of Part 177 of the Customs Regulations (19 C.F.R. 177).

A copy of the ruling or the control number indicated above should be provided with the entry documents filed at the time this merchandise is imported. If you have any questions regarding the ruling, contact National Import Specialist Mitchel Bayer at (646) 733-3102.

Sincerely,

Robert B. Swierupski
Director
National Commodity Specialist Division

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT B

# PROPOSED REVOCATION OF RULING LETTER AND PROPOSED REVOCATION OF TREATMENT RELATING TO THE TARIFF CLASSIFICATION OF A POLYESTER MONOFILAMENT YARN

**AGENCY:** U.S. Customs and Border Protection; Department of Homeland Security.

**ACTION:** Notice of revocation of a ruling letter and proposed revocation of treatment relating to the tariff classification of a polyester monofilament yarn.

**SUMMARY:** Pursuant to section 625(c), Tariff Act of 1930 (19 U.S.C. 1625 (c)), as amended by Section 623 of Title VI (Customs Modernization) of the North American Free Trade Agreement Implementation Act (Pub.L. 103–182, 107 Stat. 2057), this notice advises interested parties that Customs and Border Protection (CBP) proposes to revoke New York Ruling Letter (NY) N187601, dated October 25, 2011, with regard to the tariff classification of a polyester monofilament yarn with added metal under the Harmonized Tariff Schedule of the United States (HTSUS). CBP also proposes to revoke any treatment previously accorded by CBP to substantially identical transactions. Comments are invited on the correctness of the proposed action.

**DATES:** Comments must be received on or before May 20, 2013.

**ADDRESSES:** Written comments are to be addressed to Customs and Border Protection, Office of International Trade, Regulations and Rulings, Attention: Trade and Commercial Regulations Branch, 90 K St. N.E., 10th Floor, Washington, D.C. 20229–1179. Submitted comments may be inspected at Customs and Border Protection, 90 K St. N.E., Washington, D.C. 20229 during regular business hours. Arrangements to inspect submitted comments should be made in advance by calling Mr. Joseph Clark at (202) 325–0118.

**FOR FURTHER INFORMATION CONTACT:** Claudia Garver, Tariff Classification and Marking Branch: (202) 325–0024

**SUPPLEMENTARY INFORMATION:**

## Background

On December 8, 1993 Title VI (Customs Modernization) of the North American Free Trade Agreement Implementation Act (Pub. L. 103–182, 107 Stat. 2057) (hereinafter "Title VI"), became effective.

Tile VI amended many sections of the Tariff Act of 1930, as amended, and related laws. Two new concepts which emerge from the law are "**informed compliance**" and "**shared responsibility**." These concepts are premised on the idea that in order to maximize voluntary compliance with customs laws and regulations, the trade community needs to be clearly and completely informed of its legal obligations. Accordingly, the law imposes a greater obligation on CBP to provide the public with improved information concerning the trade community's responsibilities and rights under the customs and related laws. In addition, both the trade and CBP share responsibility in carrying out import requirements. For example, under section 484 of the Tariff Act of 1930, as amended (19 U.S.C. §1484), the importer of record is responsible for using reasonable care to enter, classify and value imported merchandise, and to provide any other information necessary to enable CBP to properly assess duties, collect accurate statistics and determine whether any other applicable legal requirement is met.

Pursuant to section 625 (c)(1), Tariff Act of 1930, as amended (19 U.S.C. 1625 (c)(1)), this notice advises interested parties that CBP is proposing to revoke one ruling letter pertaining to the tariff classification of a polyester monofilament yarn, manufactured by mixing metal powder into a polyester slurry prior to extrusion of the yarn. Although in this notice, CBP is specifically referring to the revocation of New York Ruling Letter N187601, dated October 25, 2011 (Attachment A), this notice covers any rulings on this merchandise which may exist but have not been specifically identified. CBP has undertaken reasonable efforts to search existing databases for rulings in addition to the ones identified. No further rulings have been found. Any party who has received an interpretive ruling or decision (i.e., ruling letter, internal advice memorandum or decision or protest review decision) on the merchandise subject to this notice should advise CBP during this notice period.

Similarly, pursuant to section 625 (c)(2), Tariff Act of 1930, as amended (19 U.S.C. 1625 (c)(2)), CBP proposes to revoke any treatment previously accorded by CBP to substantially identical transactions. Any person involved in substantially identical transactions should advise CBP during this notice period. An importer's failure to advise CBP of substantially identical transactions or of a specific ruling not identified in this notice, may raise issues of reasonable care on the part of the importer or its agents for importations of merchandise subsequent to the effective date of the final notice of this proposed action.

In NY N187601, CBP determined that a polyester yarn, produced by mixing metal powder into a polyester slurry prior to extrusion of the yarn, was classified in heading 5605, HTSUS, which provides for

““Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal.”

Pursuant to 19 U.S.C. 1625(c)(1), CBP proposes to revoke NY N187601, and to revoke or modify any other ruling not specifically identified, in order to reflect the proper classification of the subject yarn in heading 5402, HTSUS, according to the analysis contained in proposed Headquarters Ruling Letter (HQ) H202560, set forth as Attachment B to this document. Additionally, pursuant to 19 U.S.C. 1625(c)(2), CBP is proposing to revoke any treatment previously accorded by CBP to substantially identical transactions.

Before taking this action, consideration will be given to any written comments timely received.

Dated: April 8, 2013

IEVA K. O'ROURKE
*for*
MYLES B. HARMON,
*Director*
*Commercial and Trade Facilitation Division*

Attachments

[ATTACHMENT A]

N187601

October 25, 2011
CLA-2-56:OT:RR:NC:N3:351
CATEGORY: Classification
TARIFF NO.: 5605.00.9000

Ms. Margaret Polito
Attorney-at-Law
*222 Riverside Drive, Suite 14E*
*New York, NY 10025*

RE: The tariff classification of metalized yarns from China

Dear Ms. Polito:

In your letter dated October 3, 2011, you requested a tariff classification ruling on behalf of your client, Best Key Textiles Limited of Shenzhen, China.

You submitted two spools of a product you describe as polyester filament yarn, one of which you state is combined with aluminum powder and the other, zinc powder. Both, you state, contain titanium.

You state that the aluminum or zinc powder is added to the slurry that is extruded to create the filaments. For tariff purposes, a yarn combined with metal in the form of powder is considered a metalized yarn.

The applicable subheading for the metalized yarn will be 5605.00.9000, Harmonized Tariff Schedule of the United States (HTSUS), which provides for metalized yarn, whether or not gimped, being textile yarn, combined with metal in the form of thread, strip, or powder or covered with metal; Other. The general rate of duty will be 13.2% ad valorem.

Duty rates are provided for your convenience and are subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided on the World Wide Web at http://www.usitc.gov/tata/hts/.

This ruling is being issued under the provisions of Part 177 of the Customs Regulations (19 C.F.R. 177).

A copy of the ruling or the control number indicated above should be provided with the entry documents filed at the time this merchandise is imported. If you have any questions regarding the ruling, contact National Import Specialist Mitchel Bayer at (646) 733–3102.

*Sincerely,*

Robert B. Swierupski
*Director*
*National Commodity Specialist Division*

[ATTACHMENT B]

HQ H202560
CLA-2 OT:RR:CTF:TCM H202560 CkG
CATEGORY: Classification
TARIFF NO: 5402.47.90

Mr. John M. Peterson
Neville Peterson, LLP
*17 State Street 19th Floor*
*New York, NY 10004*

RE: Revocation of New York Ruling Letter N187601; yarn

Dear Mr. Peterson:

This is in reference to New York Ruling Letter N187601, issued to Ms. Margaret Polito on behalf of Best Key Textiles, Limited (Best Key), on October 25, 2011. We have reconsidered this ruling and find that the classification of the polyester filament yarn at issue as metalized yarn of heading 5605, Harmonized Tariff Schedule of the United States (HTSUS), was in error.

**FACTS:**

NY N187601 described the subject merchandise as follows:

> two spools of...polyester filament yarn, one of which you state is combined with aluminum powder and the other, zinc powder. Both, you state, contain titanium. You state that the aluminum or zinc powder is added to the slurry that is extruded to create the filaments.

You state that Best Key produces two products. The first is an 80 denier [1] polyester yarn claimed to contain 1900 ppm of aluminum distributed evenly throughout the polyester matrix, with an unspecified amount of titanium dioxide also added as a delusterant. You state that the total presence of metal in the yarn (aluminum, titanium and zinc) accounts for about 0.7% of the total yarn weight. The second product is a 79.6 denier polyester yarn stated to contain 2800 ppm of zinc distributed evenly throughout the polyester matrix with an unspecified amount of titanium dioxide also added as a delusterant. The total presence of metal in the yarn (zinc, titanium and aluminum) is stated to account for about 0.74% of the total yarn weight. However, we note that the CBP Laboratory in New York tested several samples of entries of Best Key garments with different results. The highest level of metal present in the samples analyzed by the CBP Laboratory shows titanium in an amount of 1608 parts per million and aluminum in the amount of 741 ppm, for a total metal content of 0.002% (by volume).

The production process of Best Key's polyester yarns begins with the drawing of polyester yarn. The extruded polyester yarn is broken up into chips and melted to produce a polyester slurry. At this point, aluminum or zinc in powder form is added to the slurry, and titanium dioxide is added as a delusterant. The polymer mixture is then forced through a spinneret, which yields yarns of the desired thickness. Due to the small amount of metal in the yarn, the presence of the metal is not discernible to the naked eye.

[1] A denier is a unit of measure for the linear mass density of fibers.

**ISSUE:**

Whether the subject yarns are classified in heading 5605, HTSUS, as metalized yarn, or heading 5402, HTSUS, as synthetic filament yarn.

**LAW AND ANALYSIS:**

Merchandise is classifiable under the HTSUS in accordance with the General Rules of Interpretation (GRIs). GRI 1 provides that classification shall be determined according to the terms of the headings and any relative section or chapter notes and, provided such headings or notes do not otherwise require, according to the remaining GRIs 2 through 6. GRI 6, HTSUS, requires that the GRI's be applied at the subheading level on the understanding that only subheadings at the same level are comparable. The GRI's apply in the same manner when comparing subheadings within a heading.

The HTSUS provisions under consideration are as follows:

| | |
|---|---|
| 5402: | Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex: |
| 5402.47: | Other, of polyesters: |
| 5402.47.90: | Other. . . |

* * * *

| | |
|---|---|
| 5605: | Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal: |
| 5605.00.90: | Other... |

* * * *

In NY N187601, CBP classified a polyester filament yarn, manufactured by Best Key via the introduction of aluminum or zinc powder into a polyester slurry, in heading 5605, HTSUS, as metalized yarn.

You argue that nothwithstanding the extremely minute amount of metal present in the yarn that the yarn satisfies the terms of the heading text to heading 5605, HTSUS, and that there is no minimimum amount of metal needed to constitute a metalized yarn of heading 5605. In addition, you argue that despite the fact that the process of manufacture for the instant yarn is not described in the explanatory notes that the heading text is broad enough to encompass the instant product. In fact you argue that the process of manufacture is irrelevant to the classification of the product.

We agree that it is the nature of the product rather than the process of manufacture which is the key consideration in determining whether the product is classifiable in heading 5605.

CBP has held in the prior rulings that tariff terms are written for the future as well as the present, which means that tariff terms are expected to encompass merchandise not known to commerce at the time of their enactment, as long as the new article possesses an essential resemblance to the one named in the statute. Thus, while heading 5605 may allow for new methods of production of metalized yarn, the article still must have the essential elements of metalized yarn. It remains to apply this test to the instant merchandise. In order to determine what the essential qualities of the metalized yarn of the heading are, CBP may examine dictionaries and other lexicographic materials to determine the term's common meaning. *See, e.g.*,

*Lonza, Inc. v. United States*, 46 F.3d 1098 (Fed. Cir. 1995). The term in question is then construed in accordance with its common and commercial meanings, which are presumed to be the same. *See, e.g.*, Nippon Kogasku (USA), Inc. v. United States, 69 CCPA 89, 673 F.2d 380 (1982); Toyota Motor Sales, Inc. v. United States, 7 C.I.T. 178 (Ct. Int'l Trade 1984); Carl Zeiss, Inc. v. United States, 195 F.3d 1375 (Fed. Cir. 1999); Lonza, 46 F.3d 1098.

Our research and consultation of industry sources indicate that the commercial meaning of "metalized yarn" does not encompass the Best Key yarns at issue. The instant product does not possess an essential resemblance to metalized yarns as understood by the common and commercial meaning of the term. For example, FTC regulations define "metallic" fiber **as** "A manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal." ***See* Section 303.7 of the** Rules and Regulations Under the Textile Fiber Products Identification Act (**Generic names and definitions for manufactured fibers),** 16 CFR § 303.7. CBP also consulted numerous technical sources on metallic yarns and fibers, none of which referenced such a product in their discussion of metalized yarn. Indeed, no reference material on textiles was found in our research which described similar products as metalized yarns. Rather, technical sources on metalized yarn noted that metallic yarns consist of pre-existing yarn or plastic film bonded to metal, as do producers of metalized yarns such as Huntingdon Yard Mill (*http://www.hymill.com/usa/?page_id=2*), SwicoFil (*http://www.swicofil.com/metallicyarn.html*), Bally Ribbon Mill (*http://www.ballyribbon.com/fibers/performance/metalized-yarns*) and Metlon (*http://www.metlon.com/metallic.htm*). For example, "Metallic Fibers" by Anita A. Desai, an Assistant Professor at the Sarvajanik College of Engineering & Technology, Textile Technology Department, defines a metallic yarn as "a continuous flat monofilament produced by a combination of plastic film and metallic component so that the metallic component is protected." *See http://www.fibre2fashion.com/industry-article/3/213/metallic-fibres1.asp* (2007). The International Bureau for the Standardization of Man-Made Fibres further notes that "metalized" yarns are yarns coated with metal. *Terminology of Man-Made Fibres*, Int'l Bur. for the Standardization of Man-Made Fibres (2009), available at *http://www.bisfa.org/Portals/BISFA/Terminology/BISFA%20Terminology2009%20%28final%20version%29.pdf*. *See also* G. Mohan Kumar, V. S. Sidharth *Metallic Yarns and Fibres in Textile*, Department Of Textile Technology, Bannari Amman Institute of Technology (2011); Irfan Ahmed Shaikh, *Pocket Textile Expert 1st Edition*; Virginia Hencken Elsasser, *Textiles: Concepts and Principles, 2nd ed*, Centenary College (2010); Allen C. Cohen *Beyond Basic Textiles* (1997).

Similarly, textile industry experts consulted by CBP from trade groups such as the American Fiber Manufacturers Association and the National Council of Textile Organizations were in agreement that the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn. This is consistent with what CBP has classified in heading 5605 in the past.

It is also noteworthy that the fiber combined with metal in the process used by Best Key looks and feels like a standard polyester fiber, as does the resulting fabric. The presence of metal is not discernible except by laboratory testing. However, a typical metalized yarn or fabric has a distinctive metallic

appearance (hence its popularity for decorative applications). *See e.g.*, "Metallic Fibers", *supra*. In addition, adding metal before extrusion, for antimicrobial, antistatic or other purposes, is not itself a new procedure. Heretofore, such products have not been considered metalized yarns. *See, e.g., http://www.noblebiomaterials.com/category.asp?itemid=380; http://www.trevira.com/en/textiles-made-from-trevira/antimicrobial-textiles/how-trevira-bioactive-works.html; http://www.cloverbrook.com/MerylSkinlifePage.htm*.

Finally, none of the exemplars mentioned in the EN to heading 5605, HTSUS, describe a product in which the presence of metal is not visually apparent. On the contrary, most describe a substantial presence of metal, either in the form of coatings, or other process. This is further support for the conclusion that the Best Key products do not have the character of products of heading 5605, HTSUS.

In summary, the Best Key yarns do not conform to the commercial meaning of metalized or metallic yarn, because the products that are considered metalized yarns or fibers have a metallic character of appearance, which is usually the result of the presence of a significantly higher metal content than the instant products.

Finally, we note that while CBP does not impose a strict requirement with respect to the amount of metal that must be present in order for a yarn to be considered metalized, tests conducted by the CBP Laboratory indicate that the samples of Best Key's yarns submitted for analysis contain only trace amounts of metal. The highest level of metal present in the samples analyzed shows titanium in the amount of 1608 parts per million and aluminum in the amount of 741 ppm. These results indicate that the subject yarns contain at most .002% metal by volume. Even assuming that 1900 ppm aluminum and 2800 ppm of zinc are present in the instant yarns, as stated by the importer, the amount of aluminum or zinc by volume would still only amount to roughly .002%, or 0.7% by weight. In contrast, a yarn that is 1% metal by volume has 100,000 ppm. Given that natural fibers in particular may naturally contain trace amounts of metal absorbed from the soil, to classify any fiber with as little metal as is present in the instant yarn in heading 5605, HTSUS, would run the risk of including in heading 5605 products with metal naturally present. As noted above, by contrast, the products recognized as metalized yarns in the textile industry have much higher concentrations of metal, with the result that the metal is immediately apparent.

**HOLDING:**

The Best Key yarn is classified in heading 5402, HTSUS, specifically subheading 5402.47.90, HTSUS, which provides for "Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex: Other, of polyesters: Other." The 2012 column one, general rate of duty is 8% *ad valorem*.

Duty rates are provided for your convenience and subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided online at *www.usitc.gov/tata/hts/*.

EFFECT ON OTHER RULINGS:
NY N187601, dated October 25, 2011, is hereby revoked.

*Sincerely,*

Myles B. Harmon,
*Director,*
*Commercial and Trade Facilitation Division*

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT C

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**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT D

[redacted]



All of the tests in this report were carried out in accordance with the procedures and provisions detailed in the Vartest Quality Assurance Manual. Vartest maintains a quality system in compliance with ISO/IEC 17025:2005 

[redacted]



All of the tests in this report were carried out in accordance with the procedures and provisions detailed in the Vartest Quality Assurance Manual. Vartest maintains a quality system in compliance with ISO/IEC 17025:2005

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[redacted]

All of the tests in this report were carried out in accordance with the procedures and provisions detailed in the Vartest Quality Assurance Manual. Vartest maintains a quality system in compliance with ISO/IEC 17025:2005

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT E

[redacted]



All of the tests in this report were carried out in accordance with the procedures and provisions detailed in the Vartest Quality Assurance Manual. Vartest maintains a quality system in compliance with ISO/IEC 17025:2005

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[redacted]

All of the tests in this report were carried out in accordance with the procedures and provisions detailed in the Vartest Quality Assurance Manual. Vartest maintains a quality system in compliance with ISO/IEC 17025:2005

[redacted]

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All of the tests in this report were carried out in accordance with the procedures and provisions detailed in the Vartest Quality Assurance Manual. Vartest maintains a quality system in compliance with ISO/IEC 17025:2005 **13-367 CBP AR000150**

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT F

BRM
Bally Ribbon Mills

# Performance Properties of the Most Frequently Utilized Fibers and Yarns

**Overview**: Yarns and fibers are the basic building block from which fabrics are composed. As a company that develops fabrics to meet specific performance applications, Bally Ribbon Mills experience has demonstrated that, the process must begin with first understanding what our customers wish to accomplish. This, coupled with our knowledge of fibers, yarns and weaving technology, provides us with a keen ability to develop fabrics that meet specific application parameters. When working with one of our applications engineers, you will note that we always inquire as to the end use for the material you are looking for. This is because by our knowing what your intended use is, we can work with you to add value to the development process. Working with customers in this fashion for the past 80, plus years is a testament to the many applications and devices we have developed to solve problems brought to us by our customers. Typically, this problem solution process has evolved to address all of the following issues: Controlled elongation, controlled porosity, air permeation, self lubrication (reduced friction), abrasion resistance, high modulus, heat and light resistance, moisture and chemical resistance, 2D & 3D shapes, high-strength, lightweight, flexibility, flame resistance, corrosion resistance, bio-compatibility, shape retention, conductivity and static resistance, etc. What are your performance requirements?

**Natural Fibers:** Natural fibers are found in a raw state in plant and animal fiber. Natural fibers include **Hemp, Bamboo, Cotton, Wool, Silk** and fibers [**Polylactic Acid (PLA), Polyglutamic Acid (PGA) polymers**] made from renewable sources such as corn. Most natural fibers (hemp, wool, bamboo, cotton and wool) are spun from short (staple) fibers into a sliver, than made into roving and spun (entwined) to form a continuous, long fiber that may be woven, braided or knitted into a fabric. The resulting fabric usually has a "fluffy" appearance (unless finished, serged, or otherwise treated) that results from the short staple fibers from which they were produced. Silk, is a naturally spun, long polymer that are very similar to man made fibers. The resulting fabrics are shiny, smooth and have a much sot after hand. PLA and PGA are natural fibers that are polymerized by an industrial process.

# Bally Ribbon Mills

## Performance Properties of the Most Frequently Utilized Fibers and Yarns

**Manmade Fibers:** Manmade fibers are composed of long chain hydrocarbons. Most are synthesized as polymers from petroleum stocks. A typical manmade fiber begins life as a solid pellet, chip, or as flake. This pellet is heated to its melting point and fed to an extruder where it is forced, at a consistent speed, through a spinneret (like a showerhead) to form many long strands (like spaghetti), or filaments in a consistent thickness that solidify quickly in the cooler air. The filaments are then drawn and stretched, to orient the long molecules into an orderly arrangement. This drawing process gives the filament both its strength and elasticity. Filaments are than joined with other filaments into a fiber bundle to form a filament yarn. A monofilament is extruded as a single filament (fishing line). The resulting yarn is graded into deniers (see glossary) and used as yarn in the weaving, braiding, or knitting of fabric.

Nylon – A manufactured fiber in which the fiber forming substance is any long chain synthetic polyamide having recurring amide groups (-NH-CO-). Properties of nylon include excellent strength, flexibility, toughness, elasticity, abrasion resistance, washability, ease of drying, moisture absorption and resistance to attack from insects and microbes.

Polyester - A manufactured fiber in which the fiber forming substance is any long chain synthetic polymer composed of at least 85% by weight of an ester of dihydric alcohol and terephthalic acid. Polyester fibers have high strength, low moisture absorption, lightweight, resistant to shrinking and are quick drying. Polyester fibers have been used in the construction of medical implantable devices and are proven to be will tolerated en vivo.

Polyethylene – A manufactured fiber made of polymerized polyethylene units. It is often a monofilament, but is also available as continuous filament yarns and as staple fiber. Polyethylene fibers have a low specific gravity, extremely low moisture regain, and good resistance to mildew and insects. It has shown utility as a geotextile, in industrial applications and outdoor furniture. Polyethylene yarn cannot be dyed. It is colored by the addition of pigments and dyes to the melt at extrusion.

BRM
Bally Ribbon Mills

## Performance Properties of the Most Frequently Utilized Fibers and Yarns

Polypropylene – A manufactured olefin fiber made from polymers, or copolymers of propylene. The resulting fiber has a high degree of crystallinity (72 to 75%), so it is very strong and resilient. It has excellent chemical resistance, and while its melt point is low compared to nylon and polyester (165°C) it is so light that it floats. It is also highly resistant to mechanical abuse. With low moisture absorption, it is useful as filtration media, protective clothing, outerwear and binding materials.

Rayon - A manufactured fiber composed of regenerated cellulose. It can be made to be quite lustrous and strong dependent upon the number and size of the filaments in the yarn. End uses are in clothing, tire cord, industrial products and in blends with other fibers to enhance functional and aesthetic qualities of the resulting fabric.

Fiberglass (e-glass, s-glass) – One may argue that fiberglass, a silica based material, is a natural fiber, but fiberglass must be highly processed before it can be useful as a yarn. Fiberglass is very brittle and difficult to work with. It does not absorb water and has very low elongation. Its most significant feature is its high strength when the fibers are in an oriented direction. Fiberglass is also very resistant to heat, flame (melts at 1121°C, or higher) and is resistant to attack by chemicals. All glass fibers have a very high (2.48 to 2.54g/cc) densities.

PEEK – Polyetheretherketone (PEEK) is a manufactured fiber with high temperature resistance that also processes easily and is very resilient. It is quite inert and has excellent surface release (low stick) properties that make it useful for food contact and for medical applications.

Carbon/Graphite Fiber – Carbon/Graphite fiber is a high tensile fiber that is made by heating rayon, polyacrylonitrile fibers, or petroleum residues to appropriate temperatures. They are typically over 90% carborized. At Bally Ribbon Mills we have woven Carbon/Graphite fibers into highly complex, engineered 2 and 3 dimensional shapes that have proven use in aerospace composite fabrics, sporting goods and racing auto frames used to form structural and weight bearing components. The resulting structures are lightweight, very strong, highly resistant to corrosion and have proven to be stealthy by their virtue of absorbing, rather then reflecting radar signals.

Bally Ribbon Mills

## Performance Properties of the Most Frequently Utilized Fibers and Yarns

**Performance Fibers:** Performance fibers are manmade fibers that have been designed to meet one or more specific applications. They are the end result of costly research and are typically trademarked as belonging to the companies that developed them. Many fabrics designed and woven by Bally Ribbon Mills have been developed with these yarns, or a blend of these yarns to achieve specific performance at an appropriate price point in line with the application.

Polytetrafluoroethylene (PTFE) - is a fluorine-containing fiber characterized by its high chemical stability, moderate tensile strength, chemical inertness and high melting point. The fiber may be drawn as a filament yarn (Brown Teflon®), or slit from a membrane (slit film) and elongated (ePTFE) white available from Lensing and W.L. Gore & Associates. PTFE has a very low frictional coefficient giving it a slippery hand. PTFE finds use in release applications, as self-lubricating bearings, packaging (food and medical) and as filtration media for highly corrosive fluids.

Aramide – A manufactured fiber in which the fiber-forming material is a long chain synthetic polyamide having at least 85% of its amide linkages (-NH-CO-) attached directly to two aromatic rings. Aramide fibers have low flammability, high strength and high modulus. Aramide fibers have found use in protective clothing, ropes and webbing used in safety applications and used as protection from ballistics and projectiles. Nomex® and Kevlar® are two aramide fibers produced by the DuPont® Company that have found use as fibers demonstrating heat and fire resistance. Aramide yarns, as a fiber class, have high modulus and significant tensile strength. Other aramide fibers include Tarwon®, Technora® and Conex® brand fibers. Unfortunately most aramide yarns are effected by UV light which alters the natural color and degrades fiber strength upon prolonged exposure.

Polybenzimidazole (PBI) – A manufactured fiber in which the fiber forming substance is a long chain aromatic polymer having recurrent imadazole groups as an intricate part of the polymer chain. PBI is a high performance fiber with high chemical resistance and will not burn in air. It has no melting point and does not drip, or melt when exposed to

# Bally Ribbon Mills

## Performance Properties of the Most Frequently Utilized Fibers and Yarns

flame. The fibers retain their flexibility; dimensional stability and strength without becoming brittle even when exposed to extreme heat. It can be used in its raw state, or blended with other fibers (Kevlar®/PBI). PBI has high moisture regain, low modulus and comfort properties similar to cotton. These properties make PBI, and blends of PBI, very useful in safety and protective applications.

Vectran® - A manufactured yarn spun from liquid crystal polymer. These fibers have high-temperature resistance, high strength and modulus, high resistance to moisture and chemicals. Vectran® exhibits good property retention in hostile environments. An outstanding feature of this yarn is that it has very low creep. Therefore Vectran® excels in applications requiring minimal elongation.

Spandex®/Lycra® - A manufactured fiber in which the fiber-forming substance is a long chain synthetic polymer composed of at least 85% of segmented polyurethane. The fiber is lighter in weight, is more durable and more supple than conventional elastic thread, while offering two to three times the restraining power. The yarn does not suffer from deterioration from oxidation, it is not damaged by body oils, perspiration, lotions, or detergents. As such, this yarn finds utility in foundation garments, bathing suits, hose and stretch webbing.

Spectra®/Dyneema® - A manufactured fiber made from ultra-high molecular weight polyethylene. This remarkably durable material is one of the world's strongest and lightest fibers. The material is pound for pound, ten times stronger then steel, more durable than polyester, and, according to the manufacturers, has a specific strength that is 40% greater than aramid fiber. The fiber is used for ballistic and projectile protection, in helmets, as vehicle armor, sailcloth, lifting slings and cut resistant gloves. It is also resistant to degradation from UV light.

Ryton® - A manufactured yarn composed of polymers containing Polyphenylene Sulfide (PPS). This fiber has high temperature resistance (230° C) and good chemical resistance. It is also flame retardant. The fiber has demonstrated to be useful as bag filtration applications, liquid chemical filtration and as webbing used in highly toxic environments.

Bally Ribbon Mills

# Performance Properties of the Most Frequently Utilized Fibers and Yarns

Metalized Yarns – These yarns are either yarn made from thinly drawn metals (gold, silver, nitinol, stainless steel, nickel, etc.) flexible enough to be woven, or yarns that have been metalized through the bonding of a metal to the yarn. Typical examples of metalized yarns are Silver (X- static® fiber) or Copper, etc. bonded to nylon. The DuPont Company manufactures a metal clad fiber called Aracon® fiber, in which a metal is directly bonded to an aramide fiber. Typical uses for metalized yarns include antimicrobal, static dissipation, shielding from electromagnetic force (EMF), shielding from radiation, shape retention and conductivity.

Reflective Yarns - Are manufactured yarns made from polymers that have minute glass beads distributed within the polymer. These glass beads, when exposed to light, reflect light back to its source. Other yarns are composed of polymers that have florescent materials distributed throughout the yarns. The florescent materials gather energy when exposed to a light source and give off (glow) this stored energy when the light source is removed. These yarns are used in reflective safety webbing, reflective barrier fabric strips and binding material on sportswear.

**Specialty Yarns:** In addition to the yarns and fibers listed above Bally Ribbon Mills has contacts at yarn manufactures that are able to combine, blend, spin and to otherwise formulate yarns to meet a specific application. Bally Ribbon Mills ships over 6 million lineal yards of fabric every month. Given our significant manufacturing capability and over 80 years in business, we have excellent sources for throwsters, twisters, spinners and fiber producers from which to discuss and acquire the materials to use in your development project. Should you feel that this service would be of benefit in your development project, please feel free to discuss this need with your Bally Ribbon Mills applications engineer.

# EXHIBIT G

# APPLICATION OF NANOMETALS IN TEXTILES PART 1

BY:

PROF. S. S. CHINCHWADE &

MANMEET SRIVASTAVA

13-367 CBP AR000159

# Application of Nanometals in Textiles - Part 1

**By: Prof. S. S. Chinchwade* & Manmeet Srivastava***

*Department of Textiles (Textile Chemistry) D.K.T.E.'s Textile and Engineering Institute, Ichalkaranji

Nano is the new buzz word in the recent times. Nano-sciences and nano technology offers great opportunities in field of sciences and technology. It is the basically a science that creates structure with improved molecular organization. Research is going on around the world to explore the application of nano-materials, nano-finishing, nano-coating, nanofibres, etc to develop innovative new products with significantly improved performance properties and functionality of textile fibers and fabrics. Now- a- days nano metals are finding most of the application in the finishing department. They are being used in UV-protection, water repellency, antibacterial activity, antistatic performance, EMI shielding, wrinkle resistance, stain resistance performance, battle dress formation etc. Nano sized materials are able to enhance the physical properties of conventional textiles. In future, the application of these wonder nano-particles can be extended to produce textiles with health care & self cleaning function.

These days, the word "nano" seems to be popping up everywhere. Wall Street, Hollywood and major universities around the globe have all endeavored to associate their diverse enterprises with this word. "Nano" is a metric unit that means one billionth of a unit; as of late it has been used most frequently in reference to nanotechnology.

Nano-technology seeks to provide and apply knowledge of the behavior of the objects in the nano meter size range to the assembly of complex structures for use in a variety of practical applications. The tinniest substances promise to transform industry and create a huge market. In chemicals, cosmetics, pharmaceuticals, technology and textiles, businesses are researching and manufacturing products based on nanotechnology, which uses bits of matter measured in billionth of a meter. The technology utilizing materials a thousand times smaller than the width of human hair is showing up everything from auto parts to sunscreens and cloths. However, a nanotechnology has been used to improve products that most of us use every day. Many textiles and research organization have already developed fabrics with distinguishing properties. Scratch-and -sniff clothing is one example. Pleasantly scented, tiny polymer bed was added to clothing, such as within a strawberry applied on a shirt. Then there menthol pajamas, scented to open nasal passages of people suffering from colds, ensuring a good night's sleep. Nano technology is adding its labels to popular brands with various products: resist spill, resist static, coolest comfort, and repels and releases stains. Research all around the world is looking at all sorts of metal additives and polymer additives, inorganic and organic materials to take them at nano scale to impart lots of interesting properties to textiles.

After food and shelter, clothing is the essential requirement for human beings. Value addition in the clothing has changed the global scenario. Research has quite convincingly shown that apparel consumer consumers all over the world are demanding the functionality in the textiles that they use. Nano particles commonly used in the commercial products are in the range of 1

to 100nm. The properties imparted to textiles using nanotechnology include water resistance, wrinkle resistance, soil resistance, anti-bacteria, anti static and UV-protection, flame retardation, improvement of dye ability and so on...

### Some commercially available nano-particles

Nano-particles may consist of various elements and compounds. The size of the molecules is the sole criterion for inclusion in the category of nano-particles. Nanoparticles have a length of 1 to 100 nm. Conventional material have grain sizes ranging from microns to several millimeters and contain several billions atoms each, nanometer sized grains contain only about 900 atoms, exhibit new and improved properties compared to the corresponding bulk materials. Some currently available nano-particles are as follows.

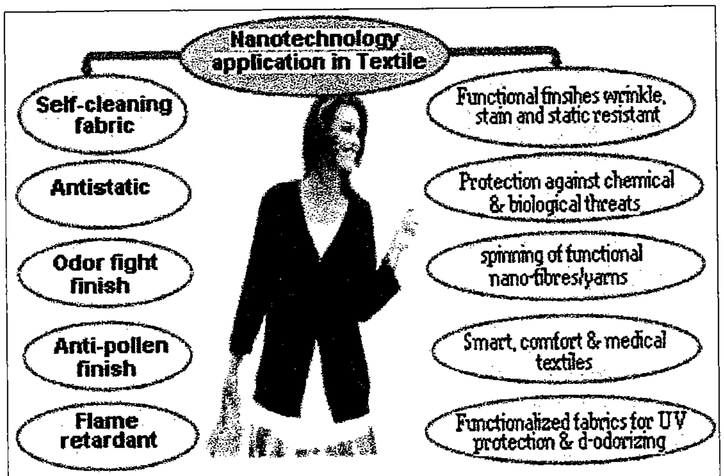
1. Metals: Pd/Pt, Ag, Fe etc.
2. Compounds: Organic: vitamins, DNA, hydroxyl apatite, colour pigments.
   Inorganic: - $TiO_2$, ZnO, $Fe_2O_3$, MgO, $SiO_2$, etc.
3. Polymer: cellulose, nano-wiskers, carbon nano-wiskers.

| Sr. | Nano-particles | Properties |
|---|---|---|
| 1. | ZnO and $TiO_2$ | UV-protection, fiber protection, oxidative catalysis. |
| 2. | Fe nano-particles | Conductive magnetic properties. |
| 3. | Silver nano-particles | Anti-bacterial finishing. |
| 4. | $TiO_2$ and MgO | Chemical and biological performance provides self-sterilizing function. |
| 5. | $SiO_2$ or $Al_2O_3$ nano- particles with PP or PE coating | Super water repellent finishing. |
| 6. | Indium-tin oxide nano-particles | EM/IR protective clothing. |
| 7. | Ceramic nano-particles | Increasing resistance to abrasion. |
| 8. | Clay nano-particles | High electric heat and chemical resistance. |
| 9. | Cellulose nano-wisker | Wrinkle resistance, stain resistance, water repellency. |
| 10. | Carbon black nano-wisker | Increasing resistance to abrasion, chemical resistance and impart electrical conductivity, coloration of some textiles. |

## DURABLE ANTI-BACTERIAL FINISHING FOR COTTON FABRICS USING SILVER NANO-PARTICLES

In recent year noble metal nano-particles have been the subject of focused researches due to their unique electrical optical, mechanical, magnetic and chemical properties that are significantly different from those of bulk materials. These specific and unique properties could be attributed to their small and large specific surface area. For these reasons metallic nano-particles have found use in many applications in various fields. Materials in the range of 1 nm - 100 nm holds much interest because it is in the range that a number of newer properties become effective. Silver nano-particles have received considerable attention due to their attractive physical and chemical properties. The use of silver nanoparticles as anti-bacterial

agent is relatively new because of their high reactivity due to the large surface- to- volume ratio. Nano-particles play a crucial role in inhibiting bacterial growth in aqueous and solid media. Silver containing materials can be employed to eliminate microorganism on textile fabrics. Silver nano-particles have been produced by various methods like electrochemical method, thermal decomposition method, laser ablation, microwave irradiation, gamma-radiations, photochemical reactions etc. the simplest and most commonly used method for bulk synthesis of metal nano-particle is the chemical reduction of metal salts. For imparting anti-bacterial properties, nanosized silver, titanium dioxide and zinc oxide have been used so far. Metallic ions and metallic compounds display a certain degree of sterilizing effect. It is considered that part of the oxygen in the air or water is turned into active oxygen by means of catalysis with the metallic ion, thereby dissolving the organic substance to create a sterilizing action. With the use of nano-sized particles, the number of particles per unit area is increased, thus the anti- bacterial effects can be maximized (fig. 1). Nano silver particle have an extremely large relative surface area, thus increasing their contact with bacteria or fungi, and vastly improving their bactericidal and fungicidal effectiveness. Nano- silver is very reactive with proteins. When contacting bacteria and fungus, it will adversely affect cellular metabolism and inhibit cell growth. It also suppresses respiration, the basal metabolism of the electron transfer system, and the transport of the substrate into the microbial cell membrane furthermore it inhibits the multiplication and growth of those bacteria and fungi which causes infection, odour, and itchiness. Hence, nano silver particles are widely applied to socks in order to prohibit the growth of bacteria.




Application of Nano Particles in Textiles

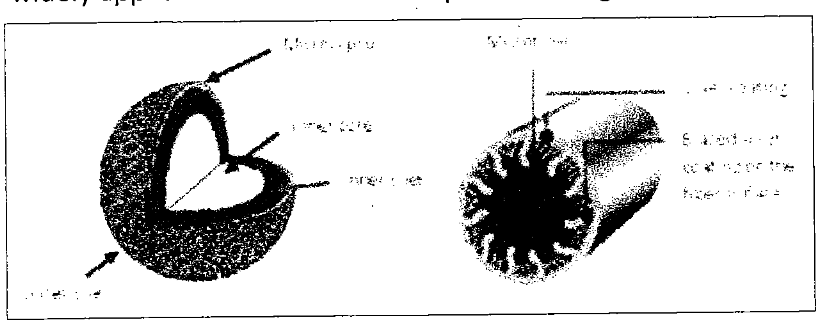


**Figure 1: Silver based nanoparticles representing (a) structural view of a silver nanoparticles containing functional microcapsule; (b) cross-section of fiber coated with silver nanoparticles.**

In addition, nano-silver can be applied to a large range of other healthcare products such as dressings for burns, scald, skin donor and recipient sites. Through the reaction, the photo catalyst is able to decompose common organic matters in the air such as odour molecules, bacteria and viruses. It has been established that a fabric treated with nano-$TiO_2$, could provide effective protection against bacteria and the discoloration of stains, due to the photo catalytic

activity of nano- $TiO_2$. ZnO nanoparticles can also provide effective photo catalytic properties once it is illuminated by light, by the way it can be employed to impart anti-bacterial properties to textiles.

Silver nano-particles exhibit new optical properties, which are no observed either in molecules or in bulk. Nanoparticles have characteristics optical absorption spectrum in the UV-visible region.

In some the cases silver nano-particles have been synthesized from silver nitrate. Trisodium citrate was used as a reductant. The synthesis silver nano-particles were applied on cotton fabrics by using various techniques, and evaluated for anti-bacterial activity with reference to specific microorganism using standard AATCC test method. The synthesis nano-particles can be applied on fabrics either in the colloidal form or by microcapsules. The important physical parameters of the fabrics like tensile strength and crease recovery angle did not deteriorate significantly in the case of direct treated fabrics. Therefore silver nano-particles treated fabrics can be used for hospital bed, linen or wound dressing.

## ANTI STATIC PERFORMANCE

Static usually builds up in synthetic fibres such as nylon and polyesters because they absorb little water. Conventionally, surfactants are used to spread the small amount of moisture on the surface of the fibre so as to pose the charge to leak away. One of the best electrically conductive nano-particles is silver. Static charge usually builds up in synthetic fibres such as polyamide and polyester because they Silver nano-particle helps to dissipate the static charge effectively. Cellulosic fibres have higher moisture content to carry away static charges, so that no static charge will accumulate. As synthetic fibers provide poor anti-static properties, research work concerning the improvement of the anti-static properties of textiles by using nanotechnology were conducted. $TiO_2$, ZnO and nano antimony-doped tin oxide (ATO) provide anti-static effects because they are electrically conductive materials. Such material helps to effectively dissipate the static charge which is accumulated on the fabric. On the other hand, Silane nanosol improves anti-static properties, as the silane gel particles on fibre absorb water and moisture in the air by amino and hydroxyl groups and bound water. Nanotechnology has been applied in manufacturing an anti-static garment. Electrically conductive nano-particles are durably anchored in the fibrils creating an electrically conductive network that prevents the formation of isolated chargeable areas and voltage peaks commonly found in conventional anti-static materials. This method can overcome the l imitation of conventional methods, which is that the anti-static agent is easily washed off after a few laundry cycles.

## STAIN ELIMINATING TEXTILES

Conventionally textile finishing methods to impart different properties to the fabrics often do not lead to permanent effects, and will lose their functions after laundering or wearing. Nano-particles can provide high durability for treated fabrics, with respect to conventional materials, because they posses large surface area and high surface energy that ensure better affinity for

the fabrics and lead to an increase in the durability of the additional textile functions imparted by finishing.

There are mainly two types stain-eliminating surface involving nanotechnologies. For the first category, for example, microscopically rough surface can be extremely water repellent, dirt particles can hardly get a hold on them, and are, therefore, removed by rain or by a simple rinse in water. The second one has a surface given by photo catalytic layers, i.e. due to a layer of nanocrystalline ZnO, fouling organic material is destroyed by solar irradiation. Nano-sized Ag, $TiO_2$ and ZnO are used for imparting stain eliminating and antibacterial properties. Metallic ions and compounds display a certain degree of sterilizing effect. It is considered that part of oxygen in the air or water is turned into active oxygen by a catalyst containing the metallic ions, thereby destroying the organic substances to create this sterilizing effect.•

Nano-materials posses enhance catalytic abilities due to their highly stressed surface atoms, which are very reactive. With the use of nano-sized particles, the number of particles per unit area is enormously increased. During the reaction, the photo catalyst is able to decompose common organic matter in the air, such as molecules causing odor, bacteria, and viruses or organic stain and dirt. These stain eliminating fabrics have a uniform nano film coating of $TiO_2$ nanoparticles, which can break down dirt molecules, pollutants and microorganism when exposed to visible and UV light. Clothes made this way could be cleaned simply exposing them to sunlight followed by water rinse.

In some of the cases ZnO nano-particles were also applied on the cotton and polyester/cotton fabrics in order to have the stain eliminating function. The performance of ZnO nanoparticles as photo catalytic oxidizing agent can be effectively transferred to fabric materials through the application of ZnO nanoparticles on the surface of cotton and P/C-blended fabrics. The stain eliminating and stain release tests indicate a significant increment of the stain eliminating activity in the ZnO treated fabrics.

### Stain resistance

Staining of fabrics occurs from re-deposition of soil during laundering, dry cleaning and deposition of dry soil from the air or contact with foreign matter. Silicon chemicals and fluoro chemical finishes can be used to confirm resistance to soil, water and even oily stains. Stain resistance, stain repellent, and dual action repel and release finishes all can be applied by using nano technology.

Repellent products lower the critical surface tension of the fabric; so the fabric does not attract stains or oils and water bead up and roll off the fabric. When a repellent finish is applied to fabrics, the invisible repellent finish applied provides superior water/oi l repellency and protection against soil and stains.

## UV PROTECTION

In recent years, consumers have become more aware of need for sun protection, which is related to incidence of sun induced skin damage and its relationship with increased exposure to UV light. UV radiation can lead to acute chronic reactions and damage, such as acceleration of

skin ageing and sunburn. Electromagnetic radiations of wavelength between 150 and 400 nm are termed as UV-rays. Approximately 10% of the sun's energy is in the form of UV. Atmosphere absorbs most of the noxious radiations emitted by the sun, only 5% of the harmful radiations reach to the surface of the earth. The most important functions performed by the garment are to protect the wearer from the weather. However it is also to protect the wearer from harmful rays of the sun. The UV blocking property of a fabric is enhanced when a dye, pigment, de-lustrant, or ultraviolet absorber finish is present that absorbs ultraviolet radiations 3 and block its transmission through a fabric to the skin. To impart UV-protection several nanocompounds or nanoparticles can be applied on the textile material. Inorganic UV-blockers are more preferable to organic UV blockers as they are non-toxic and chemically under exposure to both high temperature and UV.

***Figure 2: Fabric coated with ZnO nonmaterial for UV protected clothing (SEM-image)***

To impart UV protection, several nano compounds or nano particles can be applied on the textile material. The commonest nano compound used titanium dioxide and zinc oxide of nano size. They provide a protective benefit by reflecting, scattering or absorbing harmful UV. UV absorbers such as benzotriazole and phenyl benzotriazole; molecules are able to absorb the damaging UV rays of sunlight. UV absorbers convert UV energy into harmless heat energy. The UV blocking capacity of a fiber can be improved by incorporating $TiO_2$ into its structure. $TiO_2$ and other ceramic materials have an absorption capacity in the UV region of 280-400 nm and reflects visible and IR rays. Zinc oxide nano particles embedded in polymer matrices like soluble starch are a good example of functional nanostructures with potential for applications such as UV. Metal oxides like ZnO as UV blocker are stable as compared to organic UV blocking agents. Previously organic and inorganic UV absorbers were coated on the textile material to prevent the UV radiation effectively but they are less stable. UV blockers are usually certain semiconductor oxides such as $TiO_2$, $SiO_2$ and $Al_2O_3$. Among these semiconductor oxides, $TiO_2$ and ZnO are most commonly used. It was determined that nanosized titanium dioxide and zinc oxide were most efficient at absorbing and scattering UV radiation than the conventional size and were thus better able to block uv. This is due to fact that nano-particles have large surface area per unit mass and volume than the conventional material, leading to the increase of the effectiveness of the blocking UV radiation. For small particles, light scattering predominates at approximately one-tenth of the wavelength of the scattering light. Rayleigh's scattering theory states that the scattering was strongly dependent upon the wavelength, where the scattering was inversely proportional to the wavelength of fourth power. This theory predicts that in order to scatter UV radiation between 200 to 400 nm, the optimum particle size will be in between 20 and 40 nm. UV blocking treatment for cotton was developed using sol-gel method. A thin layer of titanium dioxide is formed on the surface of the treated cotton which provides excellent UV protection; the effect can be maintained after 50 home launderings. Zinc oxide nanorods of 10 to 50 nm in length were applied to the cotton fabric to provide UV protection. According to the

study of UV blocking effects, the fabrics treated with zinc oxide nanorods demonstrate an excellent UV-protection factor (UPF) rating. Fabric treated with UV absorber, ensures that the clothes deflects the harmful UV rays of the sun, reducing a person's UV exposure and protection the ski n from potential damage (fig. 2). The extent of skin protection required by different types of human skin depends on UV-radiation intensity and its distribution in reference to geographical location, time of day, and season. This protection is expressed as UPF, higher the UPF better is the protection against UV-rays. Titanium dioxide is a photo catalyst; once it is illuminated by light with energy higher than its band gap, the electrons in $TiO_2$ will jump from the valance band to the conduction band, and the electron (e-) and electric hole (h+) pair will form on the surface of the photo catalyst. The negative electrons and oxygen will combine into 0, the positive electric holes and water will generate hydroxyl radicals. Since both are unstable chemical substances, when the organic compound fall on the surface of the photo catalyst it will combine with 0, and OH- respectively, and turn into carbon dioxide (CO,) and water. This reaction is called oxidation reaction and the mechanism is shown in the fig. 3.

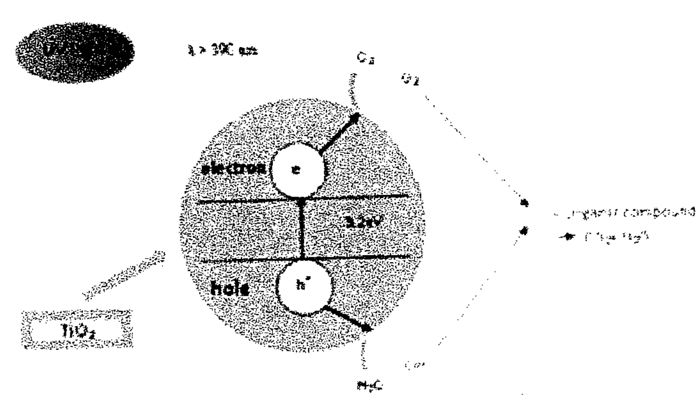



***Figure 3: Schematic presentation of UV-protecting phenomenon using TiO2 nanomaterial coating***

Several investigations have been carried out on the basis of the use of the photo catalytic property of $TiO_2$ in the field of textiles. On other hand, ZnO is also a photo catalyst, and the photo catalysis mechanism is similar to that of $TiO_2$; only the band gap (ZnO: 3.37eV, $TiO_2$: 3.2eV) is different from $TiO_2$.

## CATALYSIS

Chemical catalysis benefits especially from nanoparticles, due to the extremely large surface to volume ratio. The application potential of nanoparticles in catalysis ranges from fuel cell to catalytic converters and photo catalytic devices. Catalysis is also important for the production of chemicals.

The synthesis provides novel materials with tailored features and chemical properties: for example, nanoparticles with a distinct chemical surrounding (ligands), or specific optical properties. In this sense, chemistry is indeed a basic nanoscience. In a short-term perspective, chemistry will provide novel "nanomaterial" and in the long run, superior processes such as "self-assembly" will enable energy and time preserving strategies. In a sense, all chemical synthesis can be understood in terms of nanotechnology, because of its ability to manufacture certain molecules. Thus, chemistry forms a base for nanotechnology providing tailor-made molecules, polymers, etcetera, as well as clusters and nanoparticles.

Platinum nanoparticles are now being considered in the next generation of automotive catalytic converters because the very high surface area of nanoparticles could reduce the amount of platinum required. However, some concerns have been raised due to experiments demonstrating that they will spontaneously combust if methane is mixed with the ambient air. Ongoing research at the Centre National de la Recherche Scientifique (CNRS) in France may resolve their true usefulness for catalytic applications. Nano filtration may come to be an important application, although future research must be careful to investigate possible toxicity.

## FLAME RETARDANT FINISH

Nyacol nano technologies Inc has been the world's leading supplier of colloidal antimony pentoxide which is used as flame retardant finish in textile. It offers colloidal antimony pentoxide as fine particle dispersion for use as a flame retardant synergist with halogenated flame-retardants. (the ratio of halogen to antimony is 5:1 to 2:1). Nano antimony pentoxide is used with halogenated flame retardants finishes. To 10 parts of nycal in 1550 parts of aqueous dispersion with pH 7, add 40 parts of $H_2O$ and sufficient ammonia to bring out pH 9; mix this with 50 parts of rubber latex and spray to the non-woven material). Nano antimony pentoxide is used with halogenated flame-retardants for a flame retardant finish to the garments.

## ODOR FIGHT FINISH

Textile products have been widely used in medicine, hygiene and health. Researches on new finishing methods and fabrics-forming techniques have led to great advance in medical and hygiene textiles. Hygienic and health textiles have been used in large quantities in places such as hospitals and theaters, etc; where contact with the skin of the user occurs repeatedly and frequently. Generally, these textile materials having the higher activity of the anti-bacteria for the reason of health are desirable. In addition, the remaining on the textile materials might also affect the health and feeling of the users. The elimination of odor from these textile materials is also desirable.

Many chemicals compounds have been used to eliminate the odor or inhibit bacterial activity on textile materials. In general, bacteria have an electro negative surface. The materials having positive surface, such as cationic ion compounds and metals, can kill the bacteria. Alkaline and alkaline earth silver are currently used in the field of antibacterial.

A Taiwanese nanotech firm green shield has created underwear that fights odor. This is achieved through the nanotechnology. The under fibres releases undetectable negative ions and infrared rays that destroys odor causing bacteria. The negative ions create a magnetic field that inhibits the reproduction of bacteria, thus eliminating odor and lowering the risk of skin infection or irritation. Far infrared rays are absorbed by cells not just in the skin but throughout the body causing all the individual atoms being vibrated at a higher frequency, which speeds up the metabolism and the elimination of the wastes. This nano finish eliminates upto 99.99% bacteria, 90% of odor and 70% sticky moisture within the cloths as well as contributing to the overall health of the wearer.

# EASY CARE-HYDROPHOBIC NANO FINISH

Hydrophobic surfaces can be produced mainly in two ways (i) by creating a rough structure on a hydrophobic surface (ii) by modifying a rough surface using material with low surface free energy. Both the approach has been used to give a hydrophobic finish to textile substrates.

The water-repellent property of fabric by creating nanowhiskers, which are fluorocarbons and 1/1000 of the size of a typical cotton fibre, that are added to the fabric to create a peach fuzz effect without lowering the strength of cotton. Thus a rough hydrophobic layer is formed. Fluorocarbons are a class of organic chemicals that contains perfluroalkyl residue in which hydrogen atom have been replaced by Fluorine. These chemicals have very high thermal stability and low reactivity.

## Super Hydrophobicity

Hydrophobic fluorocarbon finishes as stated above lower the surface energy and can give a maximum water contact angle of roughly 120. To get higher contact angle and to have self-cleaning ability, super-hydrophobic finish with a contact angle of above 160 is required. This type of finish cannot be obtained by surface coating. Super hydrophobic increase in surface roughness provides a large geometric area for a relatively smack projected area. The roughened surface generally takes the form of a substrate member with a multiplicity of micro scale to Nanoscale projections or cavities. Water Repellency of rough surface was due to the air enclosed between the gaps in the surface. This enlarges the air/water interface while the solid/water interface is minimized. In this situation, spreading does not occur the water form a spherical droplet.

## Self Cleaning Effect

The self cleaning property of plant leaves rough surface was investigated. About 340 plant species were investigated, majority of wettable leaves investigated were more or less smooth without any prominent surface sculptures. In contrast water-repellent leaves exhibit various surface sculptures mainly epicuticular wax crystal in combination with papillose epidermal cells. They observed that on water repellent surface water concentrated to form spherical droplets. It came of the leaf very quickly even at slight angle of inclination (<5) out leaving any residue.

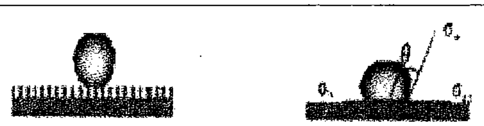


Figure. Typical Float Glass Surface θ° ~ 30°, Smooth Silane Treated Glass Surface θ ~ 110°, Super Hydrophobic Structured Surface θ > 160°

Particles of all kind adhering to leaf surface were entirely removed from leaf when subjected to natural or artificial rain. The dirt deposited on the waxy surface of the leaves are generally larger than the microstructure of the surface of the leaf and are hence deposited on the tips, as a result the interfacial area between both is minimized. In this case of a water droplet rolling over a particle, the surface area of the drop exposed to air is reduced and energy though absorption is gained. Since the adhering between particle and water droplet, the particle is captured by the water drop and removed from the leaf surface. This effect is known as lotus effect. The lotus

effect depends on two factors namely super hydrophobicity and very high water contact angle and a very low roll off angle.

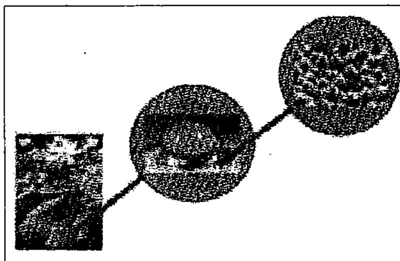


Figure. Lotus effect

Nano-Tex, the Swiss-based textile company Schoeller developed the Nano Sphere to make water-repellent fabrics. Nano Sphere impregnation involves a three - dimensional surface structure with gel-forming additives which repel water and prevent dirt particles from attaching themselves. The mechanism is similar to the lotus effect occurring in nature, as demonstrated in above Figure. Lotus plants have super hydrophobic surfaces which are rough and textured. Once water droplets fall onto them, water droplets bead up and, if the surface slopes slightly, will roll off. As a result, the surfaces stay dry even during a heavy shower. Furthermore, the droplets pick up small particles of dirt as they roll, and so the leaves of the lotus plant.

## WRINKLE RESISTANCE FINISH

Wrinkling occurs when the fibre is severally creased. In case of when fibre or fabric is bent, hydrogen bonds between the molecular chains in the amorphous regions break and allow the chains to slip past one another. The bonds, reform in new places and fibre or fabric is held in the creased configurations. To impart wrinkle resistance to fabric, resin was used previously in conventional methods. The disadvantages of conventional resin applications include in the decrease of the strength of fibre and in abrasion resistance, water absorbency and dye-ability, as well as breathability. To overcome the boundaries of using resin, some researchers have employed $TiO_2$ nanoparticles and nano-Silica to improve the wrinkle resistance of cotton and silk, respectively. $TiO_2$ nanoparticles was employed with Carboxylic acid as a catalyst under UV irradiation to catalyze the cross linking reaction between the cellulose molecule and the acid. On other hand, nano-Silica was applied with Maleic anhydride as a catalyst; the results showed that the application of nano-Silica with Maleic anhydride could successfully improve the wrinkle resistance of silk.

### ANTI-POLLEN FINISH

A few marketing companies around the world have introduced anti-pollen fabrics and garments. It is claimed that particles of 30 nm sizes are attached to the surface of yarns thus the smoothness of the finish on the surface and the anti-static effect does not let pollen or dust come close. This is achieved by using the polymer which has antistatic or electro conductive composition e.g. Fluoro alkyl methacrylate polymers). It is used in coats, blouses, hats, gloves, arm covers, bedding covers, etc.

***This article was originally published in the Textile Review magazine, April, 2012, published by Saket Projects Limited, Ahmedabad.***

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT H

**DEPARTMENT OF HOMELAND SECURITY**
**UNITED STATES CUSTOMS AND BORDER PROTECTION**

| | |
|---|---|
| **IN THE MATTER OF THE PROPOSED REVOCATION OF NEW YORK CUSTOMS RULING N187601 OF OCTOBER 25, 2011** | **Office of Regulations and Rulings Washington, D.C.** |

## AFFIRMATION

Ingrid Johnson, under penalty of perjury, hereby affirms:

1. My name is Ingrid Johnson I have been asked by Best Key Textiles, Ltd., to provide the definition of metallic yarn and fiber and determine whether Best Key's merchandise is metallic yarn or fiber in common and commercial understanding.

2. I am competent to make this affirmation and I have been fully apprised of the basis of the proposed revocation and therefore have knowledge of the facts stated herein. To my knowledge all of the facts in this affirmation, the attached curriculum vitae, and attached proposed revocation are true and correct.

3. I am currently the Assistant Chairperson in the Textile Development & Marketing Department and Acting Associate Chairperson in the Home Products Department at the Fashion Institute of Technology (FIT). I am also a full Professor of Textile Development & Marketing at FIT. I have a Master's Degree in Textiles from the North Carolina State University, and a Bachelors of Science degree in Textile Design from the Philadelphia College of Textile and Science (now known as Philadelphia University). The attached Exhibit A is a curriculum vitae of my academic background and employment history.

4. The attached Exhibit B is the proposed revocation which I have read and reviewed in

preparation for making this statement.

5. I am also an editor of Fairchild's Dictionary of Fashion and am currently working on several definitions of the terms "metallic yarn" and "metallic fiber" for the forthcoming ($8^{th}$) edition of the Dictionary. I have determined the definitions of such terms, in modern common and commercial meaning, to be as follows:

> metallic yarn 1. Most present day versions of metallic yarn are various forms of slit plastic film combined with either sheet aluminum or metallic particles. Originally these were made by sandwiching aluminum foil between two layers of cellulose acetate or cellulose acetate butyrate film with coloring material in the adhesive. While the form of yarn made from narrow strips of this material continues in the market, there are a number of other versions. Polyester film is stronger than the acetate and makes it possible to use thinner gauges of film. All of these yarns are available in a variety of thicknesses and widths as well as in staple form for spinning with other fibers.
>
> metallic fiber A generic fiber category defined by the Federal Trade Commission as "a manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal."

6. To my knowledge metallic yarn or metallic fiber is not limited by the amount of metal present in the yarn or fiber, and metal – such as aluminum, zinc, or titanium, may be added at various times during the yarn manufacturing process. While in some applications, metal is added to provide a shiny appearance, this is not a requirement for metalized yarn. Metal may be added in powder form, for purposes such as providing antimicrobial properties, or increased resistance to ultraviolet (UV) radiation. Finally, the metal does not have to be seen by the naked eye and the textile made from the yarn or fiber may have a soft feel and look, rather than only a harsh metallic appearance like Lurex®. This is increasingly the case as nano-metals are added to fibers to impart a variety of practical, non-visual properties.

7. It is my understanding that Best Key Textiles Inc.'s metallic yarn (BKMY) is made in the

following manner:

> Polyester chips are melted produce a polyester slurry. Aluminum or zinc in nano powder form is added to the slurry, and titanium dioxide is added as delusterant. The polymer mixture is then forced through a spinneret, which yields yarns of the desired thickness. Due to the small amount of metal in the yarn, the presence of the metal is not discernible to the naked eye.

Though not made in one of the traditional methods, this is clearly a production process which results in the creation of a metalized yarn. Best Key has applied for a new method patent on its production process. Such production, in my expertise and experience, provides a new technology in the creation of metallized yarn, although the yarn produced bears an essential resemblance to metalized yarns known to commerce and science.

8. Best Key Textiles Inc.'s metallic yarn (BKMY), which has a presence of .7% - .8% of metal: (zinc, titanium, or aluminum) and does not have a metallic look or feel, either in yarn or fabric form, the feel or look of metal in the fabric, is in my judgment a metallic yarn as that term is commercially known.

9. I am personally familiar with Angelina® fiber which is similar to the BKMY, in that it is fine, luminescent, and has a soft hand with a composition 2% metal and 98% textile fiber. The metal is not fully apparent in the textile made from the Angelina® fiber, as it provides highlights to rather drab textile. I find both Angelina® fiber and BKMY to fit the definition of metallic yarns.

10. Science and industry are continually experimenting to find new ways of making fibers with desirable characteristics. Years ago, the ability to produce microdenier yarns and fabrics changed the industry. At present, the use of nano particales like metals in fibers, which is what the Best Key process entails, is one of the key developments in textile science.

11. Further, affirmant sayeth not.

/s/ Ingrid Johnson
Ingrid Johnson, Assistant Chairperson
Home Products Department & Professor
Textile Development & Marketing,
Fashion Institute of Technology

May 20, 2013

Ingrid Johnson
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## EDUCATION

*North Carolina State University, Raleigh, North Carolina*
**MR Masters of Textiles** **1988**

*Philadelphia College of Textile & Science, Philadelphia, Pennsylvania*
**B.S. Textile Design** **1973**

## AWARDS

- Associateship, Textile Institute, Manchester, U.K. **1990**
- National Hosiery Association – "Award of Excellence" **1996**
- SUNY Chancellor's Award for Excellence in Faculty Service **2009**

## RELEVANT EXPERIENCE

*Fashion Institute of Technology*

**Acting Associate Chairperson** – Home Products Department **2008-present**

**Assistant Chairperson** – Textile Development & Marketing **2005-present**

**Professor –** Textile Development & Marketing Department **1999-present**

**Associate Professor –** Textile Development & Marketing Department **1998-1999**

**Acting Vice President of Academic Affairs –** Fashion Institute of Technology **1997 - 1998**
Chief Academic Officer of the college, providing leadership oversight of deans and academic divisions, departments and faculty.

**Chairperson** – Textile Development & Marketing Department **1992-1996**

**Assistant Professor** – Textile Development & Marketing Department **1986-1992**

**Adjunct Instructor** – Textile Development & Marketing Department **1981-1986**

**President** – Ingrid Johnson Associates, New York, New York **1978-1983**

**Stylist** – P.J. Gould and Company, Chicago, Illinois **1976-1978**

**Assistant Designer** - Reeves Brothers, New York, New York **1973-1976**

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| Quoted: Allure Magazine, "It's All in the Jeans", | June 1995 |
| Quoted: New York Times, "Sheer Legs for Spring", | May 1995 |
| Quoted: Clarksburg Telegram, "Women's Shape" | May 1995 |
| Quoted: Greenville Piedmont, "Summer Legs" | May 1995 |
| Interviewed, NBC News syndicated, "Jackie O's Look" | April 1995 |
| Quoted: New York Newsday, "Wonder Fiber", | April 1995 |
| Quoted: North Jersey Herald & News, "A Dyeing Industry" | Mar. 1995 |
| Quoted: Working Woman Magazine, "Sheer Determination", | Feb. 1995 |
| Quoted: Times-Union, Albany, New York, "Winter Sleeping", | Feb. 1995 |
| Quoted: San Gabriel Valley Tribune, CA., "Unnatural Attractions", | Jan. 1995 |
| Quoted: Dallas Morning News: "Hi-tech Fabrics", | Dec. 1994 |
| Quoted: Home Textiles Today, "Silk Worm", | Oct. 1994 |
| Quoted: New York Daily News, "Taking the A-Line", | Oct. 1994 |
| Quoted: Ladies' Home Journal, "Fabric Dictionary", | Sept.1994 |
| Quoted: Glamour Magazine, "No Sweat Dressing", | July 1994 |
| Quoted: Glamour Magazine, "Truth in Fashion", | Sept. 1993 |

## PROFESSIONAL ASSOCIATIONS

- American Association of Textile Chemists and Colorists
- American Association of University Women
- Fashion Group International
- International Textile and Apparel Association

## PUBLICATIONS

- Fabric Science, 7th edition, co-author, published by Fairchild Books
- Fabric Science Swatch Kit, 7th edition, co-author, published by Fairchild Books
- Fabric Science, 8th edition, co-author, published by Fairchild Books
- Fabric Science Swatch Kit, 8th edition, co-author, published by Fairchild Books
- Fabric Science, 9th edition, co-author, 2009, published by Fairchild Books

- Fabric Science Swatch Kit, 9th edition, co-author, 2009, published by Fairchild Books
- Fabric Science, 10th edition, co-author, 2012, published by Fairchild Books
- Fabric Science Swatch Kit, 10th edition, co-author, 2012, published by Fairchild Books
- Fairchild's Dictionary of Textiles, 8th edition, co-author, pub. Date Fall '12, published by Fairchild Books

## INDUSTRY PRESENTATIONS AND CONSULTING

- Le Creuset; September 2008; development of a line of textiles for the kitchen to complement the current line
- S.E. JOHNSON; March 2008; participated in S.E. Johnson's "Ideas and Inspiration" focus group regarding textile consumer needs and new product development ideas
- Carole Hockman; December 2006; 1 day presentation to the design and production team who create lingerie for the Ralph Lauren, Oscar de la Renta, Betsey Johnson, Lilly Pulitzer among others
- Sao Paulo, Brazil; November, 2006; 2 day presentation and workshop for Cataguases a manufacturer of luxury shirting fabrics marketed globally
- Cogent Public Relations; 2005 – 2007; Serves as Textile and Marketing consultant for Cogent clients in the textile and home products industries
- Rowenta; Manufacturer of Home Appliance; August, 2005 to April 2007; Garment care expert; Media Tour of 10 cities across the country; Helped create ironing tips and stain removal tips for web site
- Consultant to Fairchild Books, March 1998; reviewed book titled Why Do Blue Jeans Turn M y Legs Blue?
- Bogotá, Columbia; June 1996; 3 day Trends in Textiles Presentation to representatives of ASCOLTEX, Association of Columbia Textile Producers
- National Association of Hosiery Manufacturers; 1995-1996; Technical Spokesperson
- Rio de Janeiro, Brazil; July 1995; 2 day presentation on Fashion Marketing and Merchandising from the Textile Industry Perspective
- CNN; 1994, Managing with Lou Dobbs; textile expert along with president of Loro Piana, a luxury fabric producer and the president of Hart-Marx, a menswear manufacturer.
- Boca Raton, Florida; November 1993; Soap and Detergent Association; Trends in Textiles and Fabrics Presentation

## INSTITUTIONAL SERVICE: VICE PRESIDENT FOR ACADEMIC AFFAIRS

During my tenure, the Vice President of Academic Affairs was the Chief Academic Officer of the College. The Vice President provided leadership through the Deans to the academic divisions, departments and faculty in the areas of program development, academic standards and accreditation, professional development, and instructional research and development. The Vice President presented to the President the budget and personnel needs for the academic divisions in consultation with the Deans.

The Vice President of Academic Affairs oversaw the activities of the following areas: Academic Computing, Faculty Services, Grants, Tech Prep, International Programs, Internship Center, the Library and Media Center, the Enterprise Center, Special

Programs, the Registrars and Registration Center, Center for Professional Training, and the International Fashion Design Program at Polimoda, Italy. The Vice President also oversaw the activities of the Teaching Institute and the Presidential Scholar Program.

- July 1998; At the request of the American Consulate General of Milan, Italy, held meetings with two design institutions, Istituto Europeo del Design and the Istituto Marangoni to explore areas of collaboration and student exchange
- July 1998; Represented F.I.T. at the international fashion design contest in Portofino, Italy
- May 1998; Participated in the Liz Claiborne 'In House meet the Presidents' breakfast
- April 1998; Represented F.I.T. at the Master Apprentice Show during fashion week, sponsored by Wellman Corp. It included fashion designs by F.I.T. students of recycled polyester
- April 1998; Initiated the development of the International Consortium of Educators of the Fashion and Related Industries
- April 1998 Initiated and negotiated the Cooperation Agreement with Shenkar College of Textile Technology and Fashion, Tel Aviv, Israel. The agreement provides the opportunity for student exchange, faculty exchange, joint projects, and the exchange of educational tools
- March 1998; Arranged meeting with the president of ESMOD in Paris to discuss collaborative initiatives
- February 1998; Met students in Town Forum to discuss registration problems and their recommendations for solutions
- Spring 1998; Developed the rational and justification for the creation for the Dean of Academic Computing position
- Spring 1998; Initiated administration support and secured appropriate funding for an Honors program at F.I.T.
- 1997 – 1998; Oversaw the search for the Director of the Library and Media; interviewed final candidates and concurred with their first choice.
- November 1997; Participated in video presentation for the Educational Foundation's Annual Dinner Dance
- November 1997; Organized meeting with administrators of Westminster University, England to discuss student exchanges for the Fashion Merchandising and Advertising Design programs.
- November 1997; Renegotiated, amended and executed the agreement with the National Institute of Technology (NIFT), India to continue collaboration for faculty and students
- November 1997; Organized and provided oversight for the application to SUNY for the BFA in Computer Animation & Inactive Media; SUNY approved in January 1999
- September 1997; Upon request of the President of F.I.T., undertook the oversight of the Registrars and the Registration Center. Supported summer registration program and provided funding
- June 1997; Met with two universities in Izmir, Turkey with the intent of providing technical assistance
- Met with administrators of London College of Fashion to discuss collaborative efforts and student exchanges
- June – July 1997; Appointed Acting Dean of Art & Design
- June 1997; Attended the FFANY Awards and accepted a $10,000 check for Accessories design program
- January – March 1997; Conducted review and evaluation of college academic programs, leadership, funding and procedures

INSTITIONAL SERVICE: FACULTY

- College Wide Search Committees
  - Member: Search Committee for Dean of Curriculum & Instruction, 2000
  - Member: Search committee for Dean of Graduate Studies, 2000
  - Member: Search Committee for Dean Student Studies, 2000
  - Member: Search Committee for President of F.I.T., 1998-99
  - Member: Search Committee for Dean of Art & Design, 1993-94
  - Member: Search Committee for Dean of Graduate School, 1993-1994
  - Member: Search Committee for Dean Liberal Arts, 1993-1994
- Faculty Association Committees:
  - Admissions & Registration Fall 1986 – Spring 1988
  - Committee on Academic Standards
    - Fall 1988 – Spring 1989
    - Fall 1989 - Spring 1990 (Chairperson)
    - Fall 1990 – Spring 1992 (Chairperson)
  - Committee to Evaluate Administrative Personnel
    - Fall 2002 – Spring 2004
  - Curriculum Committee
    - Fall 1993 – Spring 1994
    - Fall 1994 – Spring 1995 (Chairperson)
    - Fall 1999 – Spring 2000
    - Fall 2000 – Spring 2001 (Chairperson)
    - Fall 2006 – Spring 2008
    - Fall 2008 – Spring 2010
  - Executive Committee (Faculty Senate)
    - Fall 1992 – Spring 1994
    - Fall 2000 – Spring 2001
    - Fall 2001 – Spring 2002 (Chairperson Elect)
    - Fall 2002 – Spring 2003 (Chairperson)
    - Fall 2003 – Spring 2004 (Past Chair)
  - Library Committee
    - Fall 1988 – Spring 1989
    - Fall 1989 – Spring 1990 (Chairperson)
  - Sabbaticals
    - Fall 1991 – Spring 1993
  - Tenure & Promotion
    - Fall 1995 – Spring 1998

- Career Pathways Presenter for Tech Prep Career Day to High School Students
- Tech Prep Consultant 2006-07 academic year
- March 2005; Presenter: Young Women's Symposium for Careers in Math & Science sponsored by Princeton Plasma Physics Laboratory Science Education; Presentation for High School Girls.
- Istanbul Technical University and F.I.T. Dual Program In Textile Development & Marketing: Helped negotiate and prepare documents for this program

which began in 2004 in Turkey and continues today

- Dec. 1996; Authored the Textile Development& Marketing Departments' Five Year Review
- Oct. 1996; Consulted with Jonathan Gorham and Center for Design Innovation (CDI) for rejuvenation of flax industry in the United States
- Sept. 1996; Participated in symposium concerning education sponsored by the international Textile Market Association
- Sept. 1996; Selected as outside reviewer for research project for Prof. Cheryl Mendelson of the Philosophy department of Columbia University
- Aug. 1996; Mentored two visiting students from Hong Kong Polytechnic throughout academic year
- May 1996; Initiated, developed and organized the first Textile Career Day at F.I.T. with support from the Textile Distributors Association (TDA)
- May 1996; Conducted meeting with Tech-Prep students from two High Schools
- Jan. – June 1996; Mentor for visiting professor, Sanjay Gupta, chair of the Textile Department from the National Institute of Fashion technology (NIFT), India
- Dec. 1995; Authored a report on the Textile Industry, the students in program and the role of educators, for inclusion in the Strategic Planning Task Force.
- Nov. 1995; Received a Certificate of Appreciation from DECA club
- Oct. 1995; Meet to discuss possible exchanges collaborations with the Associate Dean of Birmingham Institute of Art & Design, England
- Oct. 1995;Selected as industry source by The Oram Group hired by Philadelphia College of Textiles & Science to generate feasibility study
- Fall 1995 – May 1996; Selected member of a 14 person Blue Ribbon Committee which resulted in a State of the College Report
- Sept. 1995- Dec. 1996; Elected to College Wide Tenure & Promotion Committee
- Sept. 1995; Led effort to review all programs at Hong Kong Polytechnic Institute for international exchange options
- Sept. 1995- March 1996; Facilitated the 1996 B.F.A. Fashion Design student presentation: "Hot Cold Wet Dry: Adopting Fashion to Climate" by providing sources for various hi-tech fabrics
- July 1995; Assisted students from Institute Francais de la Moda (IFM) with textile market research for a fashion project
- May 1995; Provided presentation and tour for a delegation from Egypt as part of their "Economic Reform & Private Sector Development: Textiles" seminar
- May 1995; Selected for video tape interview for 50th Anniversary Oral History for college archives
- March 1995; Arranged promotional tours for merchandising and production students from Iowa State University throughout F.I.T.
- February 1995; Initiated and developed numerous articulation agreements with SUNY institutions and specific 2- year colleges in New Jersey.
- Jan. 1995; Interviewed for National Public Radio on F.I.T.'s 50th anniversary
- Jan. – June 1995; Mentor for visiting professor, V. Sivalingam from National Institute of Fashion Technology (NIFT), India
- Nov. 1995; Arranged for Ken Davis, author of <u>Don't Know Much About</u>

History to speak at Honors Colloquium
- Sept. 1994 – Sept. 1998; Member of Honors Committee which coordinates the Presidential Scholars Program
- Sept.1994 – June 1995; Chairperson College Wide Curriculum Committee
- Sept. 1994 – Dec. 1996; Member of the National Council for Textile Education
- Sept. 1994; Provided promotional tour for Dr. Abdur Rashid, Secretary Ministry of Textiles Bangladesh and a group of textile executives
- Aug. 1993 – Sept. 1997; Member College wide Aesthetics Committee, charged with setting design standards

## COURSES TAUGHT

- TS111 Fundamentals of Textiles
- TS132 Textiles for Fashion Designers
- TT024 Product Development & Marketing Applications: Wovens Laboratory
- TT324 Product Development & Marketing Applications: Wovens
- TT477 Textile Converting and Costing

## PROFESSIONAL ASSOCIATIONS

- American Association of Textile Chemists and Colorists
- American Association of University Women
- Fashion Group International
- International Textile and Apparel Association

## COMMUNITY INVOLVEMENT

- Allies Inc.: Board member, an independent non-profit organization helping individuals with disabilities to lead fulfilling lives in the community
- Allentown Historical Society
- Give Back Foundation
- Allentown Garden Club
- 4 West 16th Street Cooperative Board Member

## PERSONAL INFORMATION

- Cookies & Ink – Owner of on-line artisanal bakery
- Collector of American Contemporary Art
- Avid Gardener

[ATTACHMENT B]

HQ H202560
CLA-2 OT:RR:CTF:TCM H202560 CkG
CATEGORY: Classification
TARIFF NO: 5402.47.90

Mr. John M. Peterson
Neville Peterson, LLP
*17 State Street 19th Floor*
*New York, NY 10004*

RE: Revocation of New York Ruling Letter N187601; yarn

Dear Mr. Peterson:

This is in reference to New York Ruling Letter N187601, issued to Ms. Margaret Polito on behalf of Best Key Textiles, Limited (Best Key), on October 25, 2011. We have reconsidered this ruling and find that the classification of the polyester filament yarn at issue as metalized yarn of heading 5605, Harmonized Tariff Schedule of the United States (HTSUS), was in error.

**FACTS:**

NY N187601 described the subject merchandise as follows:

> two spools of...polyester filament yarn, one of which you state is combined with aluminum powder and the other, zinc powder. Both, you state, contain titanium. You state that the aluminum or zinc powder is added to the slurry that is extruded to create the filaments.

You state that Best Key produces two products. The first is an 80 denier [1] polyester yarn claimed to contain 1900 ppm of aluminum distributed evenly throughout the polyester matrix, with an unspecified amount of titanium dioxide also added as a delusterant. You state that the total presence of metal in the yarn (aluminum, titanium and zinc) accounts for about 0.7% of the total yarn weight. The second product is a 79.6 denier polyester yarn stated to contain 2800 ppm of zinc distributed evenly throughout the polyester matrix with an unspecified amount of titanium dioxide also added as a delusterant. The total presence of metal in the yarn (zinc, titanium and aluminum) is stated to account for about 0.74% of the total yarn weight. However, we note that the CBP Laboratory in New York tested several samples of entries of Best Key garments with different results. The highest level of metal present in the samples analyzed by the CBP Laboratory shows titanium in an amount of 1608 parts per million and aluminum in the amount of 741 ppm, for a total metal content of 0.002% (by volume).

The production process of Best Key's polyester yarns begins with the drawing of polyester yarn. The extruded polyester yarn is broken up into chips and melted to produce a polyester slurry. At this point, aluminum or zinc in powder form is added to the slurry, and titanium dioxide is added as a delusterant. The polymer mixture is then forced through a spinneret, which yields yarns of the desired thickness. Due to the small amount of metal in the yarn, the presence of the metal is not discernible to the naked eye.

[1] A denier is a unit of measure for the linear mass density of fibers.

**ISSUE:**

Whether the subject yarns are classified in heading 5605, HTSUS, as metalized yarn, or heading 5402, HTSUS, as synthetic filament yarn.

**LAW AND ANALYSIS:**

Merchandise is classifiable under the HTSUS in accordance with the General Rules of Interpretation (GRIs). GRI 1 provides that classification shall be determined according to the terms of the headings and any relative section or chapter notes and, provided such headings or notes do not otherwise require, according to the remaining GRIs 2 through 6. GRI 6, HTSUS, requires that the GRI's be applied at the subheading level on the understanding that only subheadings at the same level are comparable. The GRI's apply in the same manner when comparing subheadings within a heading.

The HTSUS provisions under consideration are as follows:

| | |
|---|---|
| 5402: | Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex: |
| 5402.47: | Other, of polyesters: |
| 5402.47.90: | Other. . . |
| * * | * * |
| 5605: | Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal: |
| 5605.00.90: | Other... |
| * * | * * |

In NY N187601, CBP classified a polyester filament yarn, manufactured by Best Key via the introduction of aluminum or zinc powder into a polyester slurry, in heading 5605, HTSUS, as metalized yarn.

You argue that nothwithstanding the extremely minute amount of metal present in the yarn that the yarn satisfies the terms of the heading text to heading 5605, HTSUS, and that there is no minimimum amount of metal needed to constitute a metalized yarn of heading 5605. In addition, you argue that despite the fact that the process of manufacture for the instant yarn is not described in the explanatory notes that the heading text is broad enough to encompass the instant product. In fact you argue that the process of manufacture is irrelevant to the classification of the product.

We agree that it is the nature of the product rather than the process of manufacture which is the key consideration in determining whether the product is classifiable in heading 5605.

CBP has held in the prior rulings that tariff terms are written for the future as well as the present, which means that tariff terms are expected to encompass merchandise not known to commerce at the time of their enactment, as long as the new article possesses an essential resemblance to the one named in the statute. Thus, while heading 5605 may allow for new methods of production of metalized yarn, the article still must have the essential elements of metalized yarn. It remains to apply this test to the instant merchandise. In order to determine what the essential qualities of the metalized yarn of the heading are, CBP may examine dictionaries and other lexicographic materials to determine the term's common meaning. *See, e.g.*,

*Lonza, Inc. v. United States*, 46 F.3d 1098 (Fed. Cir. 1995). The term in question is then construed in accordance with its common and commercial meanings, which are presumed to be the same. *See, e.g.*, Nippon Kogasku (USA), Inc. v. United States, 69 CCPA 89, 673 F.2d 380 (1982); Toyota Motor Sales, Inc. v. United States, 7 C.I.T. 178 (Ct. Int'l Trade 1984); Carl Zeiss, Inc. v. United States, 195 F.3d 1375 (Fed. Cir. 1999); Lonza, 46 F.3d 1098.

Our research and consultation of industry sources indicate that the commercial meaning of "metalized yarn" does not encompass the Best Key yarns at issue. The instant product does not possess an essential resemblance to metalized yarns as understood by the common and commercial meaning of the term. For example, FTC regulations define "metallic" fiber **as** "A manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal." ***See* Section 303.7 of the** Rules and Regulations Under the Textile Fiber Products Identification Act (**Generic names and definitions for manufactured fibers),** 16 CFR § 303.7. CBP also consulted numerous technical sources on metallic yarns and fibers, none of which referenced such a product in their discussion of metalized yarn. Indeed, no reference material on textiles was found in our research which described similar products as metalized yarns. Rather, technical sources on metalized yarn noted that metallic yarns consist of pre-existing yarn or plastic film bonded to metal, as do producers of metalized yarns such as Huntingdon Yard Mill (*http://www.hymill.com/usa/?page_id=2*), SwicoFil (*http://www.swicofil.com/metallicyarn.html*), Bally Ribbon Mill (*http://www.ballyribbon.com/fibers/performance/metalized-yarns*) and Metlon (*http://www.metlon.com/metallic.htm*). For example, "Metallic Fibers" by Anita A. Desai, an Assistant Professor at the Sarvajanik College of Engineering & Technology, Textile Technology Department, defines a metallic yarn as "a continuous flat monofilament produced by a combination of plastic film and metallic component so that the metallic component is protected." *See http://www.fibre2fashion.com/industry-article/3/213/metallic-fibres1.asp* (2007). The International Bureau for the Standardization of Man-Made Fibres further notes that "metalized" yarns are yarns coated with metal. *Terminology of Man-Made Fibres*, Int'l Bur. for the Standardization of Man-Made Fibres (2009), available at *http://www.bisfa.org/Portals/BISFA/Terminology/BISFA%20Terminology2009%20%28final%20version%29.pdf*. *See also* G. Mohan Kumar, V. S. Sidharth *Metallic Yarns and Fibres in Textile*, Department Of Textile Technology, Bannari Amman Institute of Technology (2011); Irfan Ahmed Shaikh, *Pocket Textile Expert 1st Edition*; Virginia Hencken Elsasser, *Textiles: Concepts and Principles, 2nd ed*, Centenary College (2010); Allen C. Cohen *Beyond Basic Textiles* (1997).

Similarly, textile industry experts consulted by CBP from trade groups such as the American Fiber Manufacturers Association and the National Council of Textile Organizations were in agreement that the textile industry considers a metalized yarn to be either a textile yarn covered or coated with metal, or a plastic film deposited with metal and slit into yarn. This is consistent with what CBP has classified in heading 5605 in the past.

It is also noteworthy that the fiber combined with metal in the process used by Best Key looks and feels like a standard polyester fiber, as does the resulting fabric. The presence of metal is not discernible except by laboratory testing. However, a typical metalized yarn or fabric has a distinctive metallic

appearance (hence its popularity for decorative applications). *See e.g.*, "Metallic Fibers", *supra*. In addition, adding metal before extrusion, for antimicrobial, antistatic or other purposes, is not itself a new procedure. Heretofore, such products have not been considered metalized yarns. *See, e.g., http://www.noblebiomaterials.com/category.asp?itemid=380; http://www.trevira.com/en/textiles-made-from-trevira/antimicrobial-textiles/how-trevira-bioactive-works.html; http://www.cloverbrook.com/MerylSkinlifePage.htm.*

Finally, none of the exemplars mentioned in the EN to heading 5605, HTSUS, describe a product in which the presence of metal is not visually apparent. On the contrary, most describe a substantial presence of metal, either in the form of coatings, or other process. This is further support for the conclusion that the Best Key products do not have the character of products of heading 5605, HTSUS.

In summary, the Best Key yarns do not conform to the commercial meaning of metalized or metallic yarn, because the products that are considered metalized yarns or fibers have a metallic character of appearance, which is usually the result of the presence of a significantly higher metal content than the instant products.

Finally, we note that while CBP does not impose a strict requirement with respect to the amount of metal that must be present in order for a yarn to be considered metalized, tests conducted by the CBP Laboratory indicate that the samples of Best Key's yarns submitted for analysis contain only trace amounts of metal. The highest level of metal present in the samples analyzed shows titanium in the amount of 1608 parts per million and aluminum in the amount of 741 ppm. These results indicate that the subject yarns contain at most .002% metal by volume. Even assuming that 1900 ppm aluminum and 2800 ppm of zinc are present in the instant yarns, as stated by the importer, the amount of aluminum or zinc by volume would still only amount to roughly .002%, or 0.7% by weight. In contrast, a yarn that is 1% metal by volume has 100,000 ppm. Given that natural fibers in particular may naturally contain trace amounts of metal absorbed from the soil, to classify any fiber with as little metal as is present in the instant yarn in heading 5605, HTSUS, would run the risk of including in heading 5605 products with metal naturally present. As noted above, by contrast, the products recognized as metalized yarns in the textile industry have much higher concentrations of metal, with the result that the metal is immediately apparent.

**HOLDING:**

The Best Key yarn is classified in heading 5402, HTSUS, specifically subheading 5402.47.90, HTSUS, which provides for "Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex: Other, of polyesters: Other." The 2012 column one, general rate of duty is 8% *ad valorem*.

Duty rates are provided for your convenience and subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided online at *www.usitc.gov/tata/hts/*.

Case 1:13-cv-00367-RKM Document 27-1 Page 237 Filed: 09/15/2014

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT I

# Customs Rulings Containing Reference To Metal Content Level

Best Key Textiles Ltd

May 16, 2013

# SUMMARY:

- Customs has issued 61 Rulings on HTSUS 5605.00.9000 to date.
- 36 of these Rulings contain references to metal content levels in metalized yarns classified under, HTSUS 5605.00.9000.
- The following table tabulates Rulings number with exact wordings in the Ruling letter.

| | Customs Ruling Number | Wording Description |
|---|---|---|
| 1 | NY N155179 | Please note that any yarn containing metalized yarn in any amount is considered to be metalized yarn for tariff purposes. Section XI Note 2(B)(a), Harmonized Traiff Schedule of the United States (HTSUS),noted. |
| 2 | NY N062518 | Please note that a yarn or cord that contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |
| 3 | NY N075834 | Please note that a yarn that contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |
| 4 | NY N010025 | Please note that a yarn contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |
| 5 | NY M84513 | Please note that a yarn that contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |
| 6 | NY L86560 | a yarn that contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |
| 7 | NY L86561 | Please note that a yarn that contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |
| 8 | NY L86562 | Even though the metallic yarn is only found in one ply, a yarn that contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |
| 9 | NY K89741 | Please note that a yarn that contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |

| | Customs Ruling Number | Wording Description |
|---|---|---|
| 10 | NY J82790 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 11 | NY J82791 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 12 | NY J82793 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 13 | NY J82794 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 14 | NY J82795 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 15 | NY J82796 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 16 | NY J82797 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 17 | NY J83537 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 18 | NY J84177 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |

| | Customs Ruling Number | Wording Description |
|---|---|---|
| 19 | NY J84184 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 20 | NY J84274 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff pusposes. |
| 21 | NY H87117 | Please note that a yarn that contains any amount of metal, in this case the metalized strip, is regarded in its entirety as "metalized yarn" for tariff purposes. |
| 22 | NY F89533 | For purposes of U.S. Customs classification, any yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff purposes. |
| 23 | NY D88011 | Please note that any yarn which contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff purposes. |
| 24 | NY E82087 | For purposes of U.S. Customs classification, any yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff purposes. |
| 25 | NY E84070 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff purposes. |
| 26 | NY N207978 | Also, according to Note 2 to Section XI, HTSUS, a yarn that contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |
| 27 | NY N234701 | According to the terms of Sec. XI, Note 2(B)(a), HTSUS, yarns that contain any amount of metal are regarded in their entirety as metalized yran for tariff purposes. |

| | Customs Ruling Number | Wording Description |
|---|---|---|
| 28 | NY N003334 | Please note that a yarn that contains any amount of metal is regarded in its entirety as metalized yarn for tariff purposes. |
| 29 | NY N159135 | Please note that any yarn containing metalized yarn in any amount is considered to be metalized yarn for tariff purposes. |
| 30 | NY H87352 | Please note that a yarn that contains any amount of metal is regarded in its entirety as "metalized yarn" for tariff purposes. |
| 31 | NY I81591 | Please note that a yarn that contains any amount of metallic yarn is regarded in its entirety as "metalized yarn" for tariff purposes. |
| 32 | NY N218831 | According to the terms of Sec. XI Note 2(B)(a), HTSUS, yarns that contain any amount of metal are regarded in their entirety as metalized yran for tariff purposes. |
| 33 | HQ 967828 | While a yarn that contains any amount of metal is regarded in its entirety as a "metalized yarn" |
| 34 | HQ 967462 | Yarn consisting of any textile material (including monofilament, strip and the like and paper yarn) combined with metal thread of strip, whether obtained by a process of twisting, cabling or by gimping, whatever the proportion of the metal present. |
| 35 | HQ 967829 | While a yarn that contains any amount of metal is regarded in its entirety as a "metalized yarn" |
| 36 | HQ 967830 | Yarn consisting of any textile material (including monofilament, strip and the like and paper yarn) combined with metal thread of strip, whether obtained by a process of twisting, cabling or by gimping, whatever the proportion of the metal present. While a yarn that contains any amoutn of metal is regarded in its entirety as a "metalized yarn" |

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT J

N196161

April 13, 2012

CLA-2-61:OT:RR:NC:N3:356

CATEGORY: Classification

TARIFF NO.: 6110.30.3053

Ms. Margaret Polito
222 Riverside Drive
Suite 14E
New York, NY 10025

RE: The tariff classification of a men's knit pullover from China.

Dear Ms. Polito:

In your letter dated December 5, 2010, you requested a tariff classification ruling on behalf of Best Key Trading Limited of Hong Kong. Your sample was destroyed during laboratory analysis and cannot be returned.

Style JC001 is a men's pullover garment that features a V-neckline with a rib knit spread collar (Johnny collar); short, hemmed sleeves; and a straight, hemmed bottom. The finely knit fabric measures 30 stitches per 2 centimeters counted in the horizontal direction.

Although you request classification of the garment under subheading 6105.90.8030, Harmonized Tariff Schedule of the United States (HTSUS), which provides for men's or boys' knit shirts, of other textile materials, subject to man-made fiber restraints, Customs and Border Protection laboratory analysis has determined that the fabric of Style JC001 is composed wholly of polyester yarns.

Consequently, the applicable subheading for Style JC001 will be 6110.30.3053, HTSUS, which provides for: sweaters, pullovers, sweatshirts, waistcoats (vests) and similar articles, knitted or crocheted: of man-made fibers: other: other: other: other: men's or boys': other. The rate of duty is 32% ad valorem.

Duty rates are provided for your convenience and are subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided on the World Wide Web at http://www.usitc.gov/tata/hts/.

This ruling is being issued under the provisions of Part 177 of the Customs Regulations (19 C.F.R. 177). A copy of this ruling letter or the control number indicated above should be provided with the entry documents filed at the time this merchandise is imported.

If you have any questions regarding this ruling, contact National Import Specialist Mary Ryan at 646-733-3271.

Sincerely,

Thomas J. Russo
Director,
National Commodity Specialist Division

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT K

[redacted]

Page 1

[redacted]



All of the tests in this report were carried out in accordance with the procedures and provisions detailed in the Vartest Quality Assurance Manual. Vartest maintains a quality system in compliance with ISO/IEC 17025:2005 **13-367 CBP AR000199**

[redacted]

[redacted]

All of the tests in this report were carried out in accordance with the procedures and provisions detailed in the Vartest Quality Assurance Manual. Vartest maintains a quality system in compliance with ISO/IEC 17025:2005

Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011

# EXHIBIT L

[redacted]

(b)(6),(b)(7)(C)

Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011

# EXHIBIT M

1100 Raymond Boulevard
Newark, NJ 07102

U.S. Customs and
Border Protection

JUN 6 2012

Ms. Margaret Polito, Esq.
222 Riverside Drive, Suite 14E
New York, NY 10025

**RE: Privacy Act/Freedom of Information Act Request**
**File No. NK-12182 / 2012F22085**

Dear Ms. Polito:

This acknowledges receipt of your Freedom of Information Act, 5 U.S.C 552 (FOIA) request of May 2, 2012 and received in this office May 15, 2012. On behalf of your client, Best Key Limited of Hong Kong, you have requested documentation relevant to the issuance of Binding Ruling N196161 on April 13, 2012. Specifically, you seek a copy "of the cover letter by which this garment was transmitted from NIS to the laboratory for testing; copies of all test reports generated by the laboratory...and all notes and memoranda, including electronic communication between the laboratory and NIS…".

Enclosed please find 20 pages of responsive records. However, the documents contain information which have been excised in accordance with 5 U.S.C. 552 (b)(2), 5 U.S.C. 552 (b)(6), 5 U.S.C. 552 (b)(7)(C) and 5 U.S.C. 552 (b)(7)(E).

**FOIA Exemption 2** protects information applicable to internal administrative personnel matters such as operating rules, guidelines and manual of procedures of examiners or adjudicators, to the extent that disclosure would risk circumvention of an agency regulation or statute, impede the effectiveness of an agency's activities, or reveal sensitive information that may put the safety and security of an agency activity or employee at risk. Whether there is any public interest in disclosure is legally irrelevant. Rather the concern is that a FOIA disclosure should not benefit those attempting to violate the law and avoid detection.

**FOIA Exemption 6** exempts from disclosure personnel or medical files the release of which would cause a clearly unwarranted invasion of the personal privacy. This requires a balancing of the public's right to disclosure against the individual's right to privacy. The privacy interests of the individuals in the records you have requested outweigh any minimal public interest in disclosure of this information. Any private interest you may have in that information does not factor into the aforementioned balancing test.

**FOIA Exemption 7(C)** protects records or information compiled for law enforcement purposes, the disclosure of which could reasonably be expected to constitute an unwarranted invasion of personal privacy. This exemption takes particular note of the strong interests of the individuals, whether they are suspects, witnesses, or investigators in not being unwarrantably associated with alleged criminal activity. That interest extends to persons who are not only the subject of the investigation but those who may have their privacy invaded by having their identities and information about them revealed in connection with an investigation. Based upon the traditional recognition of strong privacy interest in law enforcement records, categorical withholding of information that identifies third parties in law enforcement records is ordinarily appropriate. As such, CBP has determined that the privacy interest to the individuals in the records you have requested clearly outweigh any minimal public interest in disclosure of this information. Please note any private interest you may have in that information does not factor into the aforementioned balancing test.

**FOIA Exemption 7(E)** protects records compiled for law enforcement purposes, the release of which would disclose techniques and/or procedures for law enforcement investigations or prosecutions or would disclose guidelines for law enforcement investigations or prosecutions if such disclosure could reasonably be expected to risk circumvention of the law. Additionally, the techniques and procedures at issue are not well known to the public.

You have a right to appeal the above withholding determination. Should you wish to do so, you must send your appeal and a copy of this letter, within 60 days of the date of this letter, to: FOIA Appeals, Policy and Litigation Branch, U.S. Customs and Border Protection, 799 Ninth Street, N.W., Washington, D.C. 20229-1177, following the procedures outlined in the DHS regulations under Title 6 C.F.R. § 5.9. Your envelope and letter should be marked "FOIA Appeal." Copies of the FOIA and DHS regulations are available at www.dhs.gov/foia. You are advised that the citation of a particular exemption for withholding a document or portion thereof is not intended to indicate that other exemptions specified by the FOIA are not applicable.

The Office of Government Information Services (OGIS) also mediates disputes between FOIA requestors and Federal Agencies as a non-exclusive alternative to litigation. If you are requesting access to your own records (which is considered a Privacy Act request) you should know that OGIS does not have the authority to handle requests made under the Privacy Act of 1974. If you wish to contact OGIS, you may email them at ogis@nara.gov or call (877) 684-6448.

If you have any questions pertaining to this request, please contact Craig Sahl, of my staff, at (973) 368-6014.

Sincerely,

Edward P. Nagle
Director
Office of Fines Penalties Forfeitures
Newark/New York Area

Enclosure

[redacted]

[redacted]

Page 1 of 1

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I [redacted] d in the Vartest Quality

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All of the tests in this report were carried out in accordance with the procedures and provisions detailed in the Vartest Quality Assurance Manual. Vartest maintains a quality system in compliance with ISO/IEC 17025:2005

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[redacted]

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[redacted]

Date:

[redacted]

[redacted]

[redacted] 3-367 CBP AR000220

[redacted]

[redacted]

13-367 CBP AR000222

[redacted]

**N187601**
October 25, 2011
CLA-2-56:OT:RR:NC:N3:351
CATEGORY: Classification
TARIFF NO.: 5605.00.9000
Ms. Margaret Polito Attorney-at-Law 222 Riverside Drive, Suite 14E New York, NY 10025
RE: The tariff classification of metalized yarns from China
Dear Ms. Polito:

In your letter dated October 3, 2011, you requested a tariff classification ruling on behalf of your client, Best Key Textiles Limited of Shenzhen, China.

You submitted two spools of a product you describe as polyester filament yarn, one of which you state is combined with aluminum powder and the other, zinc powder. Both, you state, contain titanium.

You state that the aluminum or zinc powder is added to the slurry that is extruded to create the filaments. For tariff purposes, a yarn combined with metal in the form of powder is considered a metalized yarn.

The applicable subheading for the metalized yarn will be 5605.00.9000, Harmonized Tariff Schedule of the United States (HTSUS), which provides for metalized yarn, whether or not gimped, being textile yarn, combined with metal in the form of thread, strip, or powder or covered with metal; Other. The general rate of duty will be 13.2% ad valorem.

Duty rates are provided for your convenience and are subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided on the World Wide Web at http://www.usitc.gov/tata/hts/.

This ruling is being issued under the provisions of Part 177 of the Customs Regulations (19 C.F.R. 177).

A copy of the ruling or the control number indicated above should be provided with the entry documents filed at the time this merchandise is imported. If you have any questions regarding the ruling, contact National Import Specialist Mitchel Bayer at (646) 733-3102.

Sincerely,
Robert B. Swierupski Director National Commodity Specialist Division

Attachment 10
Lab Number NY20120156
Date 02/21/2012
Analyst [redacted] (b)(6)(b)(7)(c)
Page 1 of 3

(b)(2)
[redacted]

**56.05 - METALLISED YARN, WHETHER OR NOT GIMPED, BEING TEXTILE YARN, OR STRIP OR THE LIKE OF HEADING 54.04 OR 54.05, COMBINED WITH METAL IN THE FORM OF THREAD, STRIP OR POWDER OR COVERED WITH METAL.**

This heading covers :

(1) **Yarn consisting of any textile material (including monofilament, strip and the like and paper yarn) combined with metal thread or strip**, whether obtained by a process of twisting, cabling or by gimping, whatever the proportion of the metal present. The gimped yarns are obtained by wrapping metal thread or strip spirally round the textile core which does not twist with the metal. Precious metals or plated metals are frequently used.

(2) **Yarn of any textile material (including monofilament, strip and the like, and paper yarn) covered with metal by any other process.** This category includes yarn covered with metal by electro-deposition, or by giving it a coating of adhesive (e.g., gelatin) and then sprinkling it with metal powder (e.g., aluminium or bronze).

The heading also covers products consisting of a core of metal foil (generally of aluminium), or of a core of plastic film coated with metal dust, sandwiched by means of an adhesive between two layers of plastic film.

The heading covers multiple (folded) or cabled yarn containing plies of the yarn referred to above (e.g., fancy cords as used by confectioners, obtained by twisting together two or more metallised yarns as described above). It further includes certain other forms of yarn made in the same way and used for similar purposes, consisting of two or more parallel metallised yarns held together with a binding of metal thread or strip, and yarn or bundles of yarn gimped with yarn of this heading.

Metallised yarn may be gimped. It is used in the manufacture of trimmings and lace and of certain fabrics, as fancy cords, etc.

The heading **does not include** :

(a) Yarn composed of a mixture of textile materials and metal fibres conferring on them an antistatic effect (**Chapters 50 to 55**, as the case may be).

(b) Yarn reinforced with metal thread (**heading 56.07**).

(c) Cords, galloons or other articles having the character of ornamental trimmings (**heading 58.08**).

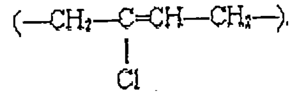
(d) Wire or strip of gold, silver, copper, aluminium or other metals (**Sections XIV and XV**).

**56.06 - GIMPED YARN, AND STRIP AND THE LIKE OF HEADING 54.04 OR 54.05, GIMPED (OTHER THAN THOSE OF HEADING 56.05 AND GIMPED HORSEHAIR YARN); CHENILLE YARN (INCLUDING FLOCK CHENILLE YARN); LOOP WALE-YARN.**

**(A) GIMPED YARN, AND STRIP AND THE LIKE OF HEADING 54.04 OR 54.05, GIMPED (OTHER THAN THOSE OF HEADING 56.05 AND GIMPED HORSEHAIR YARN)**

These products are composed of a core, usually of one or more textile yarns, around which other yarn or yarns are wound spirally. Most frequently the covering threads completely cover the core, but in some cases the turns of the spiral are spaced; in the latter case, the product may have somewhat the appearance of certain multiple (folded), cabled or fancy yarns of **Chapters 50 to 55**, but may be distinguished from them by the characteristic of gimped yarn that the core does not itself undergo a twisting with the cover threads.

Attachment 10
Lab Number NY20120156
Date 02/13/2012
Analyst [redacted] (b)(6)(b)(7)(c)
Page 2 of 3



(k) Spandex. A manufactured fiber in which the fiber-forming substance is a long chain synthetic polymer comprised of at least 85 percent of a segmented polyurethane.

(l) Vinal. A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 50 percent by weight of vinyl alcohol units (—CH2—CHOH—), and in which the total of the vinyl alcohol units and any one or more of the various acetal units is at least 85 percent by weight of the fiber.

(m) Olefin. A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85 percent by weight of ethylene, propylene, or other olefin units, except amorphous (noncrystalline) polyolefins qualifying under paragraph (j)(1) of this section. Where the fiber-forming substance is a cross-linked synthetic polymer, with low but significant crystallinity, composed of at least 95 percent by weight of ethylene and at least one other olefin unit, and the fiber is substantially elastic and heat resistant, the term lastol may be used as a generic description of the fiber.

(n) Vinyon. A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85 percent by weight of vinyl chloride units (—CH2—CHCl—).

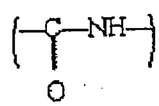
(o) Metallic. A manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal.

(p) Glass. A manufactured fiber in which the fiber-forming substance is glass.

(q) Anidex. A manufactured fiber in which the fiber-forming substance is any long chain synthetic polymer composed of at least 50 percent by weight of one or more esters of a monohydric alcohol and acrylic acid, CH2=CH—COOH.

(r) Novoloid. A manufactured fiber containing at least 85 percent by weight of a cross-linked novolac.

(s) Aramid. A manufactured fiber in which the fiber-forming substance is a long-chain synthetic polyamide in which at least 85 percent of the amide



Attachment 10
Lab Number NY20120156
Date 02/13/2012
Analyst [redacted] (b)(6)(b)(7)(c)
Page 3 of 3

linkages are attached directly to two aromatic rings.

(t) Sulfar. A manufactured fiber in which the fiber-forming substance is a long chain synthetic polysulfide in which at least 85% of the sulfide (—S—) linkages are attached directly to two (2) aromatic rings.

(u) PBI. A manufactured fiber in which the fiber-forming substance is a long chain aromatic polymer having reoccurring imidazole groups as an integral part of the polymer chain.

(v) Elastoester. A manufactured fiber in which the fiber-forming substance is a long-chain synthetic polymer composed of at least 50% by weight of aliphatic polyether and at least 35% by weight of polyester, as defined in § 303.7(c).

(w) Melamine. A manufactured fiber in which the fiber-forming substance is a synthetic polymer composed of at least 50% by weight of a cross- linked melamine polymer.

(x) Fluoropolymer. A manufactured fiber containing at least 95% of a long-chain polymer synthesized from aliphatic fluorocarbon monomers.

(y) *PLA*. A manufactured fiber in which the fiber-forming substance is composed of at least 85% by weight of lactic acid ester units derived from naturally occurring sugars.

§ 303.8 Procedure for establishing generic names for manufactured fibers.

(a) Prior to the marketing or handling of a manufactured fiber for which no generic name has been established or otherwise recognized by the Commission, the manufacturer or producer thereof shall file a written application with the Commission, requesting the establishment of a generic name for such fiber, stating therein:

(b)(2)

[redacted]

Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011

# EXHIBIT N

[redacted]

[redacted]

[redacted]

# EXHIBIT O

[redacted]

**Best Key Textiles Ltd. – Comments Opposing Revocation of N187601 of October 25, 2011**

# EXHIBIT P

[redacted]

# Metalized Yarn Rulings
# 5605.00.9000

**Version 1.0**

**Best Key Textiles Ltd.**

| A List Mention of "Any Amount" |
|---|
| HQ 967462 |
| NY E82087 |
| NY H87117 |
| NY J82790 |
| NY J82794 |
| NY J82797 |
| NY J84184 |
| NY L86560 |
| NY M84513 |
| NY A81331 |
| NY E84070 |
| NY H87352 |
| NY J82791 |
| NY J82795 |
| NY J83537 |
| NY J84274 |
| NY L86561 |
| NY N003334 |
| NY D88011 |
| NY F89533 |
| NY I81591 |
| NY J82793 |
| NY J82796 |
| NY J84177 |
| NY K89741 |
| NY L86562 |
| NY N010025 |
| NY N155179 |
| NY N062518 |
| NY N075834 |

| List B No Mention of "Any Amount" |
|---|
| NY A82538 |
| NY A88665 |
| NY A89028 |
| NY B89128 |
| NY B89130 |
| NY D83015 |
| NY F89534 |
| NY G80264 |
| NY G82041 |
| HQ 964997 |
| NY I80137 |
| NY J88747 |
| NY R00713 |
| NY K86873 |
| NY L82752 |
| NY M841510 |
| NY N007584 |
| NY N187601 |
| NY N034758 |
| NY N039361 |
| NY M845510 |
| NY N159135 |

| List C Revocation Modification |
|---|
| HQ 967830 |
| HQ 967828 |
| HQ 967829 |
| HQ 966438 |
| HQ 966599 |
| HQ 952934 |

List A Total:30 List B Total:22 List C Total:6

Total:58

13-367 CBP AR000236

# A List
## Mention of "Any Amount"

| | | |
|---|---|---|
| HQ 967462 | NY E84070 | NY I81591 |
| NY E82087 | NY H87352 | NY J82793 |
| NY H87117 | NY J82791 | NY J82796 |
| NY J82790 | NY J82795 | NY J84177 |
| NY J82794 | NY J83537 | NY K89741 |
| NY J82797 | NY J84274 | NY L86562 |
| NY J84184 | NY L86561 | NY N010025 |
| NY L86560 | NY N003334 | NY N155179 |
| NY M84513 | NY D88011 | NY N062518 |
| NY A81331 | NY F89533 | NY N075834 |

**List A Total:30**

# List C
# Revocation
# Modification

| |
|---|
| HQ 967830 |
| HQ 967828 |
| HQ 967829 |
| HQ 966438 |
| HQ 966599 |
| HQ 952934 |

**List C Total:6**

# List B
# No Mention of "Any Amount"

| | |
|---|---|
| NY A82538 | NY J88747 |
| NY A88665 | NY R00713 |
| NY A89028 | NY K86873 |
| NY B89128 | NY L82752 |
| NY B89130 | NY M841510 |
| NY D83015 | NY N007584 |
| NY F89534 | NY N187601 |
| NY G80264 | NY N034758 |
| NY G82041 | NY N039361 |
| HQ 964997 | NY M845510 |
| NY I80137 | NY N159135 |

**List B Total:22**

Case 1:14-cv-00367 Document 27-1 Filed 11/08/13
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Case 1:14-cv-00367-RKM Document 27-1 Filed 09/15/2014
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**Exhibit 1**

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CONFIDENTIAL

[redacted]

13-367 CBP AR000252
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Member of the SGS Group (SGS SA)

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13-367 CBP AR000254
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Case 1:14-cv-00327 Document 27-2 Filed 11/08/13 09/15/2014 Page 5 of
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Member of the SGS Group (SGS SA)

# Huntingdon Yarn Mill

## "Quality yarns manufactured in the USA"

- Home
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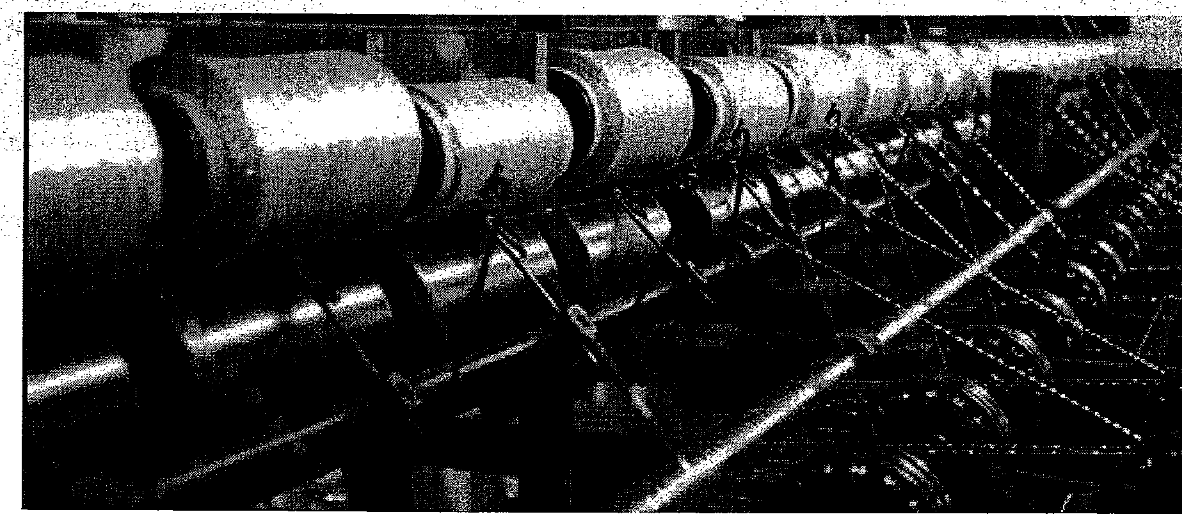
- News
- Contact us

## About us

type here to search

Huntingdon Yarn Mill has been operating in Northeast Philadelphia for over 60 years. The mill provides a facility for three important yarn-refining processes. Raw materials are subjected to these processes in order to generate novelty yarns. The company caters to a high-end niche market that uses the yarns to produce fine clothing, crafts, and upholstery fabrics. Huntingdon Yarn Mill is the only operating manufacturing company of its kind in the United States.



**Here at Huntingdon, we pride ourselves on:**

- Quality
- Creativity
- Reliability

### 3 Individual and promotional yarn processes... From one producer

**Metallic Yarn**

- Huntingdon began metallic twisting in the post-War '40's—the technique was virtually "born and raised" in the HYM plant
- Involves twisting metallic yarn with nylon, rayon, acetate or silk
- Many of the current twists, combinations, number of turns, and the shrinking and setting of nylon, originated with HYM
- Much of the machinery in use today for metallic yarn twisting was produced especially for the technique

**Novelty Yarn Twisting**

- Has a 60-year history at HYM
- Huntingdon has consistently improved quality characteristics and individuality by constant machine innovation and adaptation.

**HYM Skein Dye House**

- Has collected a library of more than 4000 unique styles since its establishment 10 years ago
- State of the Art skein dyeing facility available for Solid and Space Dyeing.
- Can duplicate any wool, rayon, wool/nylon, wool/rayon, silk colors
- Only manufacturer in the country, and among very few in the world, that dyes a 40 or 70 denier nylon the same color as the metallic.

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- President's Letter

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  - President's Letter
- News
- Contact us

## About Us

Huntingdon is a domestic supplier producing yarns in Philadelphia, PA since 1940. We are manufacturing some of the finest fancy twisted novelty yarns and we cater to all aspects of the textile industry: craft, apparel and home furnishings.

## Contact Us

Your e-mail Subject Y Submit

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SWICOFIL PASSION For SUCCESS

Metallic Yarns for textile applications

Home
Company Details
Team Members
Staff Members
Products
Markets
Supplier
Local Contacts
Inquiry
Links

Site Plan

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6020 Emmenbrücke
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www.swicofil.com
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T 0041 41 2679024
F 0041 41 2679225

Google

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Search WWW
Search www.swicofil.com

Natural Fibres Synthetic Fibres

| Fancy yarn | Flocked yarn | Chenille yarn | Metallic yarn | Glowing yarn |
|---|---|---|---|---|

**Metallic yarns**

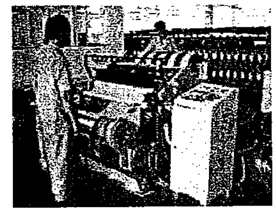
| Chemical characteristics | Production process | Available types | Color sheet |
|---|---|---|---|

**Chemical characteristics**

| | |
|---|---|
| Ironing | 110°C,15 sec |
| Dry Heat | 180°C, 60 sec |
| Alkali, Solution of 1st Process | P.H.4.7,°C, 30 min |
| Hot Water | 90°C, 30 min |
| Hand Washing | 0.5 % soap<br>0.2 % Sodium Carbonate Anhydride<br>60°C, 30 min. |
| Rubbing | 200g, 100 times |
| Dry Cleaning | Trichloroethylene<br>Perchloroethylene<br>Petroleum Benzene<br>25°C, 30 min. |
| Steaming | 100°C, 40 min. |
| Boiling Water | 30min.-1hr. |
| Acid | 2% Oxalic Acid, 60°C, 10min.<br>2% Acetic Acid, 60°C, 10min. |
| Scouring For Nylon, Polyester, Rayon, Acetate&Cotton | Soda Ash, 1g/l<br>60°C, 30 min. |
| Customs tariff number | 5605.00.1000 |

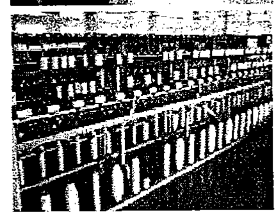
**Production process**

**Coating process :** Aluminum metallized PET ( polyester ) film is lacquered with protective epoxy resin to keep a shiny looking metallized surface. In case of Gold and colors, appropriate quantity of metal complex dyestuffs are mixed with Resin measured by an accurate electronic scale. Our most concern, tension control, starts at this process. Our machine is equipped with fully automatic tension control, temperature control and web guide devices

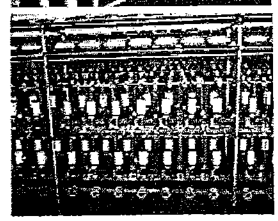


**Wide cutting / Pancake process :** Protective lacquered film is cut into 2" to 5" wide pancakes. Our machine is equipped with fully automatic tension control, web guide and oiling devices.

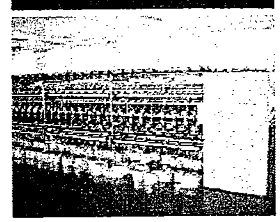
**Micro slitting & winding process :** Wide cut pancake roll is being slit into various sizes while film passes through a cutting head and being wound on spools ( Max. 450pcs of spools ). This process requires intensive tension control. Our machine is equipped with fully automatic tension control and oiling devices. Moreover our Korean technician is highly skilled for more than 30 years to control slitting tension.



**Bobbin winding process :** 20D PA-6 / Nylon mono filament yarn is spooled on well balanced bakelite bobbins.



**Single/Double covering process :** M-type metallic yarn is covered/twisted /supported with 20D PA-6, 2ends at 280TPM +/- 5. TPM is regularly checked with Stroboscope.



**Single Covering process :** Viscose rayon, or Polyester yarn is single covered with M-type metallic yarn.

**Vacuum setting process** : MH, MHS and ST types are steam set to remove self-tangling effect.

**Cone winding process :** MX, MH, MHS and ST types are re-wound into tapered paper cones. Our tension control by an accurate gauge is being finished at this process.

## Available types

M TYPE

13-367 CBP AR000264

Slit metallized Polyester film ( aluminum metallized and protective epoxy resin coated ) into various sizes of 1/32", 1/69", 1/85", 1/92", 1/100", 1/110" and 1/134" wound on ABS bobbin ( flange )

Basic colors : Silver and Gold.
Available colors on request :
Brown, Blue, Green, Pink, Purple, Red, Black etc.
Special colors on request :
Rainbow/pearl, Multi-color, Fluorescent, Transparent, Mat color etc.
Available thickness : 12Mic., 15Mic./PA film, 16Mic./non-metallized, 25Mic., 30Mic./Laminated etc.
Available width : 1/134", 1/110", 1/100", 1/92", 1/85", 1/69" and 1/32".
ABS bobbins/spools :
M-type to be supplied in the weight of 100g, 150g and 300g per spool.
Use
This is widely used in pre-dyed textiles (weaving), embroidery ,velvet , laces, ribbons, accessories, industrial subsidiary materials, interior decoration, kitchen scrubber etc.

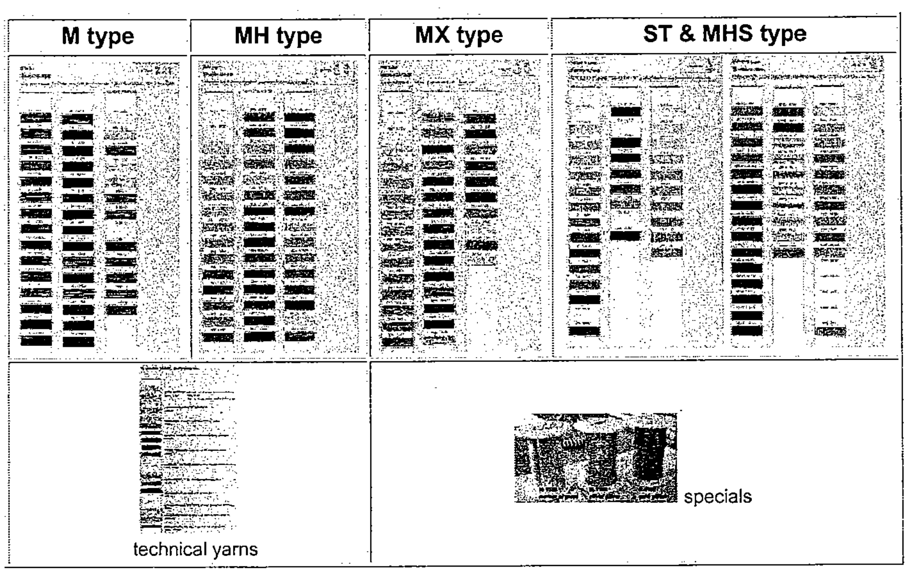
MH TYPE
Supported Yarn
M-type metallic yarn supported with Viscose rayon 120D or Polyester filament yarn 150D. To be supplied 500g/cone after vacuum steam setting process to prevent from self-tangling problem. This product feels soft and has sober lustrous effect.
Use
This product is used in sweaters ,knitwear , tricots, weaving, embroidery, high fashion and other clothes.

MX TYPE
Twisted Yarn
M-type metallic yarn supported with PA-6 20D/1F X 2ends ( 1 end covered clockwise, 1end covered counterclockwise at 280TPM ) and wound 500g per conical tube ( cone ). The yarn has strong tensile strength and graceful, lustrous color.
Use
This product is used in sweaters, knitwear, tricots, pre-dyed textiles weaving), embroidery, stocking, accessories, industrial subsidiary materials etc.

MHS TYPE
Viscose rayon or Nylon yarn round covered with M-type metallic yarn at the spaced regular intervals. To be supplied 250g, or 500g/cone after vacuum setting process to prevent from self-tangling problem.

ST TYPE
Viscose rayon, or Polyester filament yarn round covered with M-type metallic yarn at the fully closed regular intervals. To be supplied 150g, 200g, 250g, or 500g/cone after vacuum steam setting process to prevent from self-tangling problem.

## Color cards




13-367 CBP AR000265

| TYPE | WIDTH<br>Flat metallic yarn | TWISTED YARN | LENGTH/KG<br>Silver / Colors | DENIER<br>Silver / Colors |
|---|---|---|---|---|
| M | 1/32" | | 65,000M / 61,000M | 138D / 147D |
| | 1/69" | | 140,000M / 130,000M | 64D / 69D |
| | 1/85" | | 176,000M / 163,000M | 51D / 55D |
| | 1/100" | | 204,000M / 191,000M | 44D / 47D |
| | 1/110" | | 225,000M / 209,000M | 40D / 43D |
| MX | 1/69" | Nylon mono | 86,000M / 82,000M | 104D / 109D |
| | 1/85" | Filament yarn | 106,000M / 103,000M | 85D / 87D |
| | 1/100" | 20D/1F x 2 | | |
| MH | 1/100" | Viscose ***Rayon.*** | 78,000M / 76,000M | 115D / 118D |
| | | Or polyester(PFY) | | |
| | | ***75D***, 120D, 150D | | |
| MHS | 1/100" | Viscose ***Rayon.*** | 55,000M / 54,000M | 164D / 167D |
| | | Or polyester(PFY) | | |
| | | 75D, ***120D***, 150D | | |
| ST | 1/64" | Viscose ***Rayon.*** | 39,000M / 38,000M | 230D / 237D |
| | 1/69" | Or polyester(PFY) | 39,500M / 38,500M | 228D / 234D |
| | | 75D, 120D, ***150D*** | | |

**COMPOSITION / YIELD**

The below data is based on silver. There would be 10% less or more for gold and colors.

| Type Width | Thickness | Composition(appx.) | Length/kg | Nm | Denier |
|---|---|---|---|---|---|
| M 1/32" | 12Mic. | M:100% | 65,000M | Nm65 | 1380 |
| 1/69" | 12Mic. | M:100% | 140,000M | Nm140 | 640 |
| 1/100" | 12Mic. | M:100% | 204,000M | Nm204 | 450 |
| 1/110" | 12Mic. | M:100% | 225,000M | Nm225 | 400 |
| 1/127" | 12Mic. | M:100% | 257,000M | Nm257 | 350 |
| 1/168" | 12Mic. | M:100% | 333,000M | Nm333 | 270 |
| MX 1/69" | 12Mic. | M:63%, PA-6/20D : 37% | 83,000M+/-3% | Nm83 | 1100 |
| 1/100" | 12Mic. | M:52%, PA-6/20D : 48% | 107,000M+/-3% | Nm107 | 850 |
| 1/127" | 12Mic. | M:60%, PA-6/12D : 40% | 156,000M+/-3% | Nm156 | 580 |
| 1/168" | 12Mic. | M:50%, PA-6/12D : 50% | 180,000M+/-3% | Nm180 | 500 |
| MH 1/110" | 12Mic. | M:35%, PET/75D : 65% | 76,000M+/-3% | Nm76 | 1200 |
| ST 1/64" | 12Mic. | M:38%, VS/150D : 62% | 38,000M+/-3% | Nm38 | 2370 |
| MHS 1/100" | 12Mic. | M:34%, VS/150D : 66% | 43,000M+/-3% | Nm43 | 2100 |

**TECHNICAL DATA**

The below data is made in our laboratory. Please test our samples before you put them into the actual production.

| | | |
|---|---|---|
| Laundry | 0.5%(5gr./liter) soap 60℃ 20min. | O |
| Dry cleaning | Petroleum benzine 100% 20℃ 30min.<br>perchlorethylene 100% 20℃ 30min.<br>trichloethyline 100% 20℃ 30min. | O<br>O<br>O |
| Ironing | 135℃ 15sec. | O |
| Hot water | 70℃ 30min. | O |
| Steam | 103℃ 10min. | O |
| Dry heating | 100℃ 60sec. | O |
| Scouring for nylon, polyester rayon, acetate & cotton | soap 0.5gr./liter, soda ash 0.5gr./liter 80℃ 30min | X |
| For wool | monogen 5.0gr./liter, 60℃ 30min. | O |
| Overdye wool & nylon nylon and acetate | acetic acid 2.0gr./liter, 60℃ 120min. | X |
| Bleaching | sodium hydrosulfite 2.0gr./liter, 80℃ 60min<br>soda ash 0.5gr./liter, 80℃ 60min<br><br>ph 9 30% hydrogen peroxide 40gr./liter, 70℃ 60min.<br>10% sodium hydrochlorite 40gr./liter, 70℃ 60min. | X<br>X<br><br>X<br>X |
| Finishing | sodium carbonate ph 9, 95℃ 60min | X |
| Caustic soda | 28 Be' 21℃ sec. | X |

When you process PMP yarn,

1. Do not stretch the yarns with high tension.
2. Do not use Sodium chloride for breaching.
3. Remove residual sulfur from the finished fabrics, if any.

## Bobbin size (for M-type)

1) 80mm/OD x 47mm/ID x 98mm/L : Approx. 300grms./Bobbin.

2) 70mm/OD x 42mm/ID x 68mm/L : Approx. 150grms./Bobbin.

3) 56mm/OD x 30mm/ID x 64mm/L : Approx. 100grms./Bobbin.

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# Metalized Yarns

## Metalized yarns are flexible metals which are woven or metals bonded to various other fibers.

Metalized yarns are either yarn made from thinly drawn metals (gold, silver, nitinol, stainless steel, nickel, etc.) flexible enough to be woven, or yarns that have been metalized through the bonding of a metal to the yarn. Typical examples of metalized yarns are silver (X-static® fiber) or copper bonded to nylon. The DuPont Company manufactures a metal clad fiber called Aracon® fiber in which a metal is directly bonded to an aramid fiber.

**Metalized yarn properties include:**

- Antimicrobal
- Static dissipation
- Shielding from electromagnetic force (EMF)
- Shielding from radiation
- Shape retention
- Conductivity

Because of the wide variety of metalized fibers available, please call our design engineers for specific information on a particular metal.

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# CONTENTS

# EXTENDED CONTENTS

## Bamboo Rayon

**Bamboo Rayon** is a regenerated fiber from bamboo pulp, made in a process similar to rayon. This fiber provides a soft hand with great luster. It has a 13 percent moisture regain, very good wicking, and elasticity (almost 20 percent). Bamboo colors easily with less dye needed. It is antimicrobial but loses this when regenerated. It blocks ultraviolet rays, and naturally neutralizes odors. Bamboo has a problem with abrasion resistance and is often blended with cotton, polyester, and Micro Modal® HWM rayon. The bamboo plant is known for quick growth, estimated to be a third faster than any other plant. It requires no pesticides and absorbs carbon dioxide at five times the rate of most trees. Almost all bamboo comes from China. It is used for towels, robes, mats, socks, underwear, T-shirts, and baby garments.

## Glass

The first commercial production of **glass** fiber in the United States was in 1936 by the Owens-Corning Fiberglas Corporation.

Glass is a manufactured fiber in which the fiber-forming substance is glass. The fiber has a round, rodlike shape with a very smooth surface.

### *Properties*

**Favorable** Glass has excellent strength. It is a stiff fiber and requires no ironing. It suffers no effect from exposure to sunlight, even over extended periods, which makes glass an excellent fiber for curtains and drapes. Also, glass does not burn, but it melts at 1500°F ≈ 815°C.

**Unfavorable** Glass is a heavy fiber with poor drapability. Its abrasion resistance is extremely poor, which makes it unusable for clothing or other items that involve significant movement of fibers or fabric. Additionally, the glass fragments would cause skin abrasion on a person who came in direct contact with it. Therefore, it is not used for clothing or carpet. It has very poor elasticity and also has a poor hand. Glass is completely hydrophobic, not absorbing any moisture. It should not be laundered in a washing machine because its poor flexing property causes the fiber to crack or break.

### *End Uses*

The principal end uses of this fiber include draperies, electrical and thermal insulation, tires, and optical fiber for communication, electronic, and medical equipment.

### *Trademarks*

The following is only a partial list of glass trademarks:

Fiberglas®

PPG™

## Metallic

The earliest **metallic** fibers were strips of real gold and silver. These can be seen in ancient saris, carpets, and tapestries. Later, less expensive metals such as steel, copper, and aluminum were used. The first commercial production of metallic fiber in the United States was in 1946.

Metallic fibers are now commonly made by laminating, using a roll of aluminum foil and two rolls of transparent plastic film, which are joined together with the aluminum foil sandwiched between the two sheets of plastic. An adhesive binds the three layers together. Sometimes, instead of two sheets of plastic, a resin coating is used to protect both sides of the aluminum foil or metallized plastic film. Color can be added (e.g., gold, silver, blue) by applying pigments on the foil or in the adhesive or lacquer coating. The roll is then cut into narrow strips to form a length of metallic yarn equal to the length of the roll.

Metallic is a manufactured fiber composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal. The width of the metallic yarn can be measured in millimeters and the thickness in microns. Metallic film can be made of an iridescent plastic that has been dyed with fluorescent dyes to create new looks and markets.

### *Properties*

Metallic fibers are used primarily for decorative effects, although when placed in carpeting (as little as 2 percent) the functional effect is to lessen the accumulation of static. These fibers (not completely metal) do not tarnish or cut adjacent yarns. They can be ironed at low temperatures and can also be washed and dry cleaned. Metallic fibers increase fabric stiffness.

### *End Uses*

Metallic fibers are used in a wide variety of items, including draperies, tablecloths, dresses (Figure 3.12), sweaters, swimwear, shoes, accessories, ribbons, and carpet.

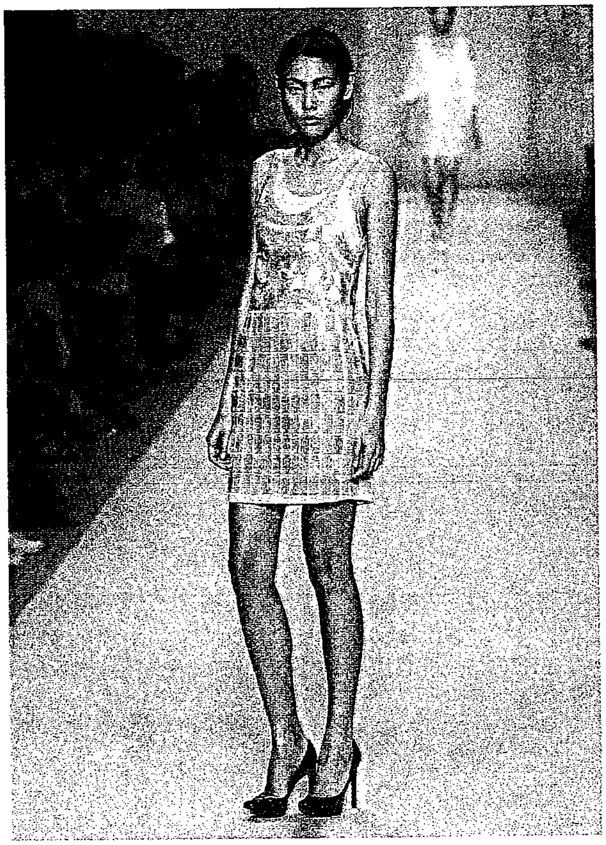

FIGURE 3.12
A dress with metallic fibers.

### Trademarks

The following is only a partial list of metallic fiber trademarks:

Lurex®

Angelina®

## Modacrylic

The first commercial production of **modacrylic** fiber was in 1949 by the Union Carbide Corporation in the United States. The word modacrylic comes from the term *modified acrylic*.

Modacrylic is a manufactured fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of fewer than 85 percent but at least 35 percent by weight of acrylonitrile units. The fiber has a circular shape with a smooth surface.

### Properties

**Favorable** Modacrylic is a medium-weight fiber with fair strength and abrasion resistance but good elasticity and resiliency. It has good drape and is highly resistant

FIGURE 3.13
Modacrylic fibers are used to make the faux fur covering on these stuffed bears.

to sunlight. It may be washed or dry cleaned. This fiber has excellent resistance to chemicals and flame. It has fair resistance to pilling and little static problem.

**Unfavorable** Modacrylic is hydrophobic (0.4 to 3 percent moisture regain). It can be ironed, but only at a low temperature (about 225°F (107°C) or less).

### End Uses

The principal end uses include fake-fur fabrics, wigs, children's sleepwear, fleece fabric for stuffed animals, upholstery, and drapery and industrial fabrics. (See Figure 3.13).

### Trademarks

Kanecaron®

## Triacetate

The first commercial production of **triacetate** fiber in the United States was in 1954 by the Hoechst Celanese Corporation. It is a subclass of acetate.

Production of this fiber was discontinued in the United States in 1986 because of its limited market and high cost relative to other manufactured fibers. It is still being produced in Europe.

Triacetate is a manufactured fiber in which the fiber-forming substance is cellulose acetate, not less than 92 percent of the hydroxyl groups being acetylated. The fiber has a lobular, round shape with a smooth surface.

### Properties

**Favorable** Triacetate is a medium-weight fiber with a luxurious hand and excellent drape. It has good resiliency and excellent pleat and crease retention when heat-set.

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13-367 CBP AR000274

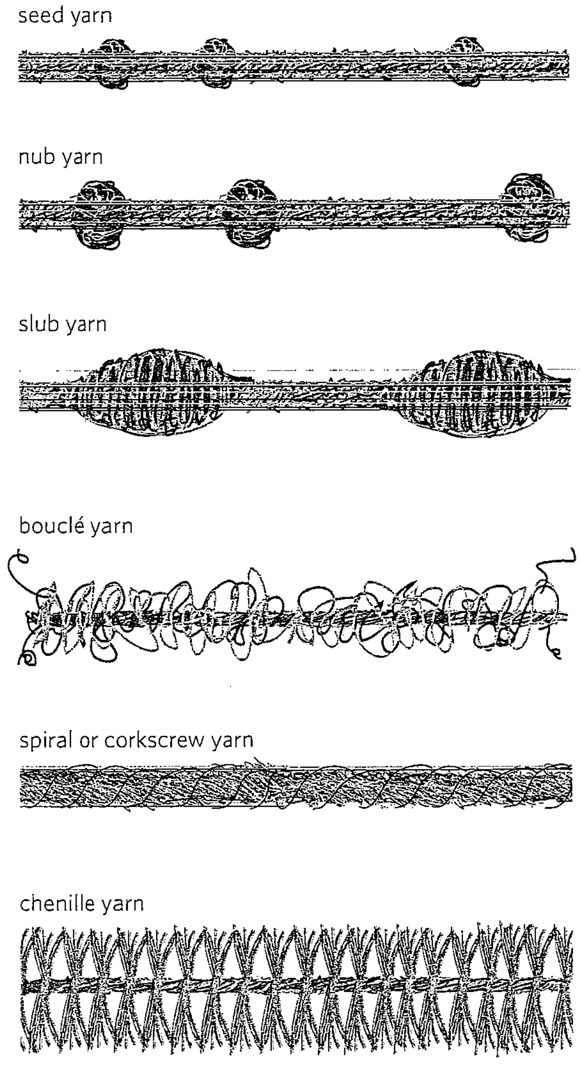


FIGURE 4.12
Popular types of novelty yarns.

FIGURE 4.13
Chanel garment made of bouclé yarns.

surface of the substrate are particularly vulnerable to rubbing action. Novelty yarn fabrics should be avoided in applications where durability and long wear must take precedence over fabric beauty and interesting surface effects.

## Chenille Yarns

**Chenille yarns** are yarns that have a soft pile protruding from their surface. Their appearance resembles pipe cleaners without the wire. Unlike pipe cleaners, however, chenille yarns are soft, supple, and very flexible.

Chenille yarns are made in an unusual manner. The yarn is made by slitting narrow lengths from 1/8 inch to 1/4 inch (3.18 millimeters to 6.35 millimeters) of a fabric that has first been woven especially for this purpose. This fabric is a leno-effect weave (see p. 103) and has a filling of soft, twisted yarns. After the fabric is woven, it is cut lengthwise into narrow strips, each strip becoming a chenille yarn. The crisscrossing leno warp prevents the soft filling from falling out. (See Figure 4.14.)

Chenille yarns may be made from any fiber, but most commonly they are made of cotton, wool, rayon, or nylon. Chenille yarns are used in woven fabric to produce soft pilelike effects on bedspreads and other decorative fabrics. Chenille yarns have rather low resistance to abrasion, and their use should be avoided in products that will be subjected to even minimal fabric rubbing.

## Metallic Yarns

A strip of metallic fiber (see p. 56) is also a **metallic yarn.** Such yarn is flat and ribbonlike rather than round or elliptical in cross-section, as are other yarns. Strips of metallic yarns are usually from 1/32 inch (0.80 millimeter)

SA000367

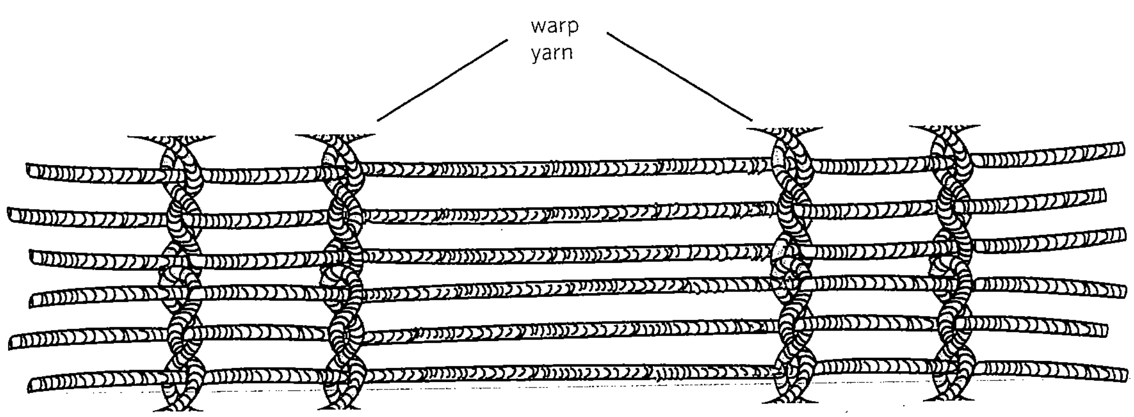


FIGURE 4.14
Making chenille yarn: Filling yarns are cut between each section of warp leno.

to 1⁄128 inch (0.20 millimeter) wide. These yarns can be supported by loosely twisting one or more fine-filament yarns around them (e.g., two 15-denier nylon yarns). This increases its strength and abrasion resistance.

Metallic yarns are mostly used for decorative rather than functional purposes; a wide range of colors and effects is available. Metallic yarns tend to be expensive. Lurex Co., Ltd. is a major metallic yarn manufacturer.

## Yarn Numbering Systems

Yarns are bought and sold by the pound. Knitting mills, for example, purchase their yarn requirements in pounds rather than in yards. Even home knitters purchase yarns in packages sold by ounce or gram weight.

**Yarn numbering systems** are used to express a relationship between a unit length and weight of yarns—either meters per gram or yards per pound. The relationship between unit length and weight also reflects the diameter or thickness of a yarn. This is because a yarn of low weight per unit of length would be finer (thinner) than a yarn with a higher weight per equal unit of length. However, the diameter of the yarn may vary for any given yarn number because of differences in the specific gravity of the fibers from which yarns are made, and because some yarns are highly twisted whereas others have low twist.

The terms **yarn numbers** and **yarn sizes** are used interchangeably. Despite the words "yarn size," bear in mind that the size (or number) expresses a relationship between a unit of length and weight, and only a close, but not exact, relationship to diameter or thickness.

There are two main numbering systems in use: the denier system, which is used for all filament yarns, and the yarn-count system, which is used for all spun yarns. A third system known as the tex system was developed to bring all yarn numbering systems into a single system for all types of yarns.

### The Denier System

The **denier** system is the simpler of the two numbering systems. In this system, heavier and usually thicker filament yarns are designated by higher denier numbers. Very fine yarns, of 10 denier, for example, are used in sheer hosiery. The heavy, coarse yarns used in carpeting are around 2,000 denier. The denier system is called a direct system because higher denier numbers designate heavier (thicker) yarn. A 100-denier nylon filament has twice the weight of an equal length of 50-denier nylon filament. Thus the system is based on weight in grams per 9,000 meters.

A 1-denier yarn is a yarn in which 9,000 meters, if weighed, would equal 1 gram. A 2-denier yarn would weigh 2 grams per 9,000 meters, and so forth. Thus the yarn has twice the thickness per unit length.

Filament yarns are sold by indicating the number of filaments the yarn contains, and the twist as well as the denier size. For example, a 300-10-½ Z filament yarn indicates a yarn of 300 denier in size, containing 10 filaments with ½ TPI of Z twist. Each filament fiber in this yarn would be 30 denier. A 400-40-½ Z would be thicker than the 300-10-½ Z, but have finer filaments because each filament fiber would be a 10-denier fiber and thus finer.

### The Yarn Count System

In the **yarn count** system, the yarn count number is inversely proportional to weight. This system, therefore, is indirect. A 50-count spun yarn has twice the weight (thickness) of a 100-count spun yarn. The

SA000368



13-367 CBP AR000276

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# Metallic Fibres

**By : Anita. A. Desai**

## ABSTRACT

The hallmark of all Indian festivities is the golden glitter of the sarees and similarly-adorned dresses worn on such occasions. All that glitters may not be gold and the â€˜zariâ€™ (metallic yarn), responsible for this lustrous appearance, may or may not contain any gold. This paper reviews the different types of metallic fibres and their production.

## INTRODUCTION

Metallic yarns or threads, in general, have been known for more than 3000 years. Gold and silver were hammered into extremely thin sheets, then cut into ribbons and worked into fabrics. These were the first â€˜man madeâ€™ fibres, which came thousands of years before nylon or rayon. The Persians made fabulous carpets with gold thread and the Indians, ornamental sarees with it. The metal threads were twisted, doubled or wrapped around some other thread such as cotton.

With the advancement of technology, metal/conductive textiles found extensive functional applications. These materials have high electrical conductivity and radar reflecting property, yet are lightweight and flexible. Various methods have been developed to coat fibers and textile materials by metals.

Â» sputter coating
Â» coating metal powder with binders
Â» electro less coating
Â» vacuum deposition

Many technical applications demand properties which cannot be obtained by simply processing common textile material into single textile fabric. However, combination of knitted structure, textile and metal yarn of wire make it possible to create innovative products for multipurpose technical application. Thus knitted fabrics are flexible and extensible and metal wire possess properties which are advantageous in technical textile with regard to their permanent antistatic behavior, known conductivity, shielding from electro magnetic field & resistance to cutting.

## METALLIC FIBRE

The term metallic fibre, in its general sense, means simply a fibre that is made from metal. The generic term â€œmetallicâ€ was adopted by the U.S. Federal Trade Commission and is defined as: A manufactured fibre composed of metal, plastic-coated metal, metal-coated plastic, or a core completely covered by metal. Thus, metallic fibres are: fibres produced from metals, which may be alone or in conjunction with other substances.

These metal filaments were made by beating soft metals and alloys, such as gold, silver, copper and bronze, into thin sheets, and then cutting the sheets into narrow ribbon-like filaments. The filaments were used entirely for decorative purposes, providing a glitter and sparkle that could not be achieved by other means.

As textile fibres, these metal filaments had inherent short comings which restricted their use. They were expensive to produce; they tended to be inflexible and stiff, and the ribbon-like cross-section provided cutting edges that made for a harsh, rough handle; they were troublesome to knit or weave, and they had only a limited resistance to abrasion. Apart from gold, the metals would tend to tarnish, the sparkle being dimmed with the passage of time.

Despite these shortcomings, the metallic ribbon-filament has remained in use for decorative purposes right up to the present day. The development of modern techniques of surface-protection has brought cheaper metals into use; aluminium foil, for example, may be anodized and dyed before being slit into filaments which are colourful and corrosion-resistant.

Ribbon-filaments are now manufactured in considerable quantity, e.g. as tinsel, but they remain an essentially decorative material. The filaments are weak and inextensible, and are easily broken during wear; they lack the flexibility that is essential in a genuine textile fibre.

### Multicomponent Metallic Filaments

In recent years, the ribbon filament of metal has undergone a transformation, which has changed the commercial outlook, for this ancient product. The metal of the filament is now sandwiched between layers of plastic, which protect it from the atmosphere and from other corrosive influences. The multicomponent filaments produced by slitting sandwich materials of this type are stronger and more robust than the filaments cut from metal foil alone. They retain the glitter of the metal during prolonged periods of use, and have a soft, pleasant handle. Coloured pigments may be added to the adhesive used in sticking the plastic films to the metal foil or metallized film.

Metallic fibres of this type are now w...ly used in the textile industry, and are produc... in a range of colours and forms by many manufacturers. They remain, however, essentially decorative materials and their applications are restricted to this type of use.

Modern metallic fibres of the multi-component type are based largely on aluminium, which provides sparkle, and glitter at fraction of the cost of the early types of decorative fibre based for example, on gold.

The aluminium in these fibres is in the form of a narrow ribbon-filament of either (a) metal foil, or (b) a plastic film which has been vacuum-plated with vaporized aluminium. This is coated with a layer or layers of plastic film. distort

In these composite structures, the metal is protected from corrosive influences of its environment, and from mechanical damage. Multicomponent metallic fibres have achieved great popularity as decorative fibres and are an in facet of the modern textile industry.

**TYPES OF METALLIC (M.C.) FIBRE**

Metallic (m.c.) fibres may be made in almost infinite variety by using different metals and plastics in their manufacture. Aluminium is, however, the metal most commonly selected, and it is sandwiched between cellulose acetate butyrate, cellophane (cellulose) or polyester films.

The following are the types of yarn commonly produced:

(1)Acetate Butyrate, Aluminium Foil: A continuous flat monofilament composed of aluminium foil laminated on both reflective surfaces with cellulose acetate butyrate film.

(2) Cellophane Aluminium Foil: A continuous flat monofilament composed of aluminium foil laminated on both reflective surfaces with Cellophane film.

(3)Polyester, Aluminium Foil: A continuous flat monofilament composed of Aluminium foil laminated on both reflective surfaces with polyester film.

(4) Polyester, Aluminum Metallized Polyester: A continuous flat monofilament composed of aluminium metallized polyester laminated on its metallized surface or surfaces with polyester film.

(5) Polyester, Aluminium Metallized, Non-Laminated: A continuous, flat monofilament composed of a single layer of aluminium metallized polyester protected on its metallized surface.

The acetate butyrate types of metallic fibre are best used for applications which are not subjected to wet processing of other than very mild forms. Polyester types will withstand wet treatments or dry-heat operations as commonly used with most man made fibres, but reference should be made to manufacturerâ€™s recommendations regarding time, pH and temperature conditions.

**NOMENCLATURE AND TERMINOLOGY**

In the U.S., the former Metallic Yarns Institute established minimum quality standards for metallic (m.c.) yarns for textile purposes, and prescribed a standard system of designation and terms of reference for these yarns.

The following definition of a metallic yarn was established by the Institute, and in general it is still in common use:

Metallic Yarn: A continuous flat monofilament produced by a combination of plastic film and metallic component so that the metallic component is protected.

Terminology

Metallic yarns are designated by a group of three symbols, each separated by a hyphen, setting forth the two dimensions of width, and gauge or thickness, and generic type.

1. Width. The width of the yarn is expressed as the fraction of an inch to which the yarn has been cut, viz., 1/32, 1/64, etc.

2. Gauge (or Thickness). The thickness or gauge of the yarn is expressed as the sum of the thickness of the plastic film and metallic component in hundred-thousand of an inch, as a whole number, viz., 35, 50, 150, 200, etc.

3. Generic Type. The type of the yarn is expressed on the basis of two components of the laminate - the generic name of the plastic film and the metal.

The components are separated by a comma, viz., Polyester, Foil.
Example: A Polyester/Aluminium Foil Yarn, 1/64 inch wide and 150/100,000 inch thick, is expressed in the industry as:

A manufacturerâ€™s trade name or mark may accompany, but where utilized, either alone or in combination, the above must be separately stated or referred to.

**STRUCTURE AND PROPERTIES**



The properties of a metallic (m.c.) fibre depend upon the nature of the plastic film used in its production, and of the metal used as the

centre of the sandwich.

In general, the fibres behave in a manner similar to man-made fibres spun from polymer on which the plastic film is based. Acetate butyrate metallic filaments, for example, have a resemblance to acetate fibres; polyester type metallic filaments are similar to polyester fibres in their general characteristics.

The nature of the aluminium layer inside the sandwich affects the properties of the metallic filament to a significant extent. In Types 1, 2 and 3, the aluminium is a continuous layer of foil; in Types 4 and 5, on the other hand, it is in the form of discrete particles which have been deposited on a layer of plastic film. The discontinuous layer of the latter type results in a finer, softer and more pliable filament which differ in many respects from those of the foil-type metallic fibres as indicated below. The figures quoted refer to specific metallic fibres of the various basic types, but there is considerable variation in properties between fibres of the same type.

**Fine Structure and Appearance:**

Metallic (m.c.) fibres are flat, ribbon-like filaments, commonly 3.2-0.2 mm (1/8-1/128 in) width. They are smooth-surfaced, and may be coloured or uncoloured.

**Tenacity:**

Acetate Butyrate, foil: 2.6 cN/tex (0.3 g/den).
Polyester, foil: 6.2 cN/tex (0.79 g/den).
Polyester, metallized: 11.0 cN/tex (1.25 g/den).

**Elongation:**

Acetate Butyrate, foil: 30 percent.
Polyester, foil: 140 percent.
Polyester, metallized: 140 percent.

**Elastic Recovery:**

Acetate Butyrate, foil: 75 percent at 5 percent elongation.
Polyester, foil: 50 percent at 5 percent elongation.
Polyester, metallized: 100 percent at 5 percent elongation.

**Flex Resistance:**

Relative flex resistances of the main types are in the following ratios:
Acetate Butyrate, foil: 1
Polyester, foil: 18
Polyester, metallized: 70

**Abrasion Resistance:**

Acetate Butyrate, foil: fair.
Polyester, foil: good.
Polyester, metallized: excellent.

**Effect of Moisture Regain:**

Acetate Butyrate, foil: 0.1 per cent. Polyester, foil: 0.5 per cent.
Polyester, metallized: 0.25 per cent.

**Thermal Properties:**

Softening point: Acetate Butyrate, foil: 205Â°C.
Polyester: 232Â°C.

**Effect of Age:**

Nil.

**Effect of Sunlight:**

Some loss of strength on prolonged exposure.

**Chemical Properties:**

**Acids**

Generally good resistance.

**Alkalis**

Acetate Butyrate: good resistance to weak alkalis; degraded by strong alkalis.
Polyester: these also show similar characteristics. Metal foil types are more resistant.

**General**

Acetate Butyrate: Similar to acetate yarn. Not affected by sea water, chlorinated water, or perspiration. Generally resistant to bleaches, but sensitive to caustic soda used in peroxide bleaching. Also sensitive to copper sulphate and sodium carbonate at high temperatures.
Polyester: Generally good resistance.

**Effect of Organic Solvents**

Acetate Butyrate: Attacked by acetone, ether, chloroform, methyl alcohol, tetrachloroethane. Not attacked by benzene, carbon tetrachloride, ethyl alcohol, perchloroethylene, trichloro ethylene.
Polyester: Attacked by acetone, benzene, chloroform, tetra chloroethane, trichioroethylene. Not attacked by carbon tetra chloro ethyl alcohol, methyl alcohol, perchloroethylene, white spirit.

**Insects**

Not attacked.

**Micro-organisms**

Not attacked.

**Electrical Properties**

Metallic (m.c.) fibres conduct electricity - the metallized types having a lower conductivity than the foil types.

**METALLIZED (M.C.) FIBRES IN USE**

**General Characteristics**

**Appearance:**

Metallic (m c) yarns are used in the industry almost entirely as decorative materials. They provide a metallic, g1itter and sparkle that cannot be obtained in other ways. The aluminium foil that provides the glitter in a modern metallic yarn is protected from corrosive materials of its environment by the plastic film in which it is enclosed. It remains untarnished through long periods of wear, and polyester types will withstand repeated launderings without losing their sparkle. Metallic yarns are not affected by sea water or by the chlorinated water of swimming pools and are widely used in modern swimwear.

The dyestuffs used in colouring metallic fibres are usually fast to light and the colour remains bright to match the sparkle from the aluminium foil.

**Mechanical Properties:**

As metallic (m.c.) yarns are used primarily for decorative purposes, they do not as a rule contribute significantly to the strength of fabrics or garments. Nevertheless they may be used as weft or warp yarns, and are strong enough to withstand the weaving, and knitting operations. If necessary the metallic yarns are combined with support yarns, such as nylon. The plastic film of the metallic yarn is flexible, and the yarns are extensible to a degree that depends upon the type.

**Chemical Properties:**

Aluminium will corrode and tarnish in air, and in contact with seawater, but in metallic fibres it is protected so effectively that it retains its glitter for long periods. The chemical resistance of a metallic filament is, in general, the chemical resistance of the plastic film. In the case of polyester films, this is outstanding.
If metallic fibres are held in contact with strong alkaline solutions for prolonged periods, the aluminium may be attacked at the unprotected edges of the ribbon. Metallic fibres should not, therefore, be subjected to alkaline reagents of significant strength.

Organic solvents, too, may attack the laminate adhesive or lacquer coating; great care should be taken in dry cleaning to ensure that an appropriate type of solvent is used.

**Thermal Properties:**

The plastic films in metallic fibres are thermoplastic, and will soften at elevated temperatures. Delamination may occur if the fibres are heated, and acetate types in particular should be processed only at low temperatures.



The plastic film may be permanently embossed by heat and pressure, and special effects may be introduced into the fibres in this way.

**Washing:**

Acetate butyrate types may be hand washed in lukewarm water with a mild soap. If processed as silks or woollens, they may be safely washed in home or commercial laundry equipment.

Polyester types may be washed at temperatures up to 70Â°C. Dimensional stability is good and crease resistance is fair.

Most coated polyester yarns will not withstand treatments other than those used for silks or woollens.

**Drying:**

Acetate butyrate types must be dried at as low a temperature as possible. Polyester types may be dried at higher temperatures as used for polyester fibres, with the exception of most coated types.

**Ironing:**

Acetate types should be ironed at temperatures no higher than 105Â°C. Polyester types may be ironed at temperatures up to 130Â°C. Rayon setting is preferable for both types.

**Dry Cleaning:**

Metallic fibres may be dry cleaned without difficulty, provided care is taken in the selection of solvent to suit the type of fibre.

**End uses:** Metallic (m.c.) yarns are used for decorative purposes in almost every field of textile application. Important end-uses include womenâ€™s dress goods, upholstery, curtains, table linens, swimwear, packaging, footwear, car upholstery, suits and hats.

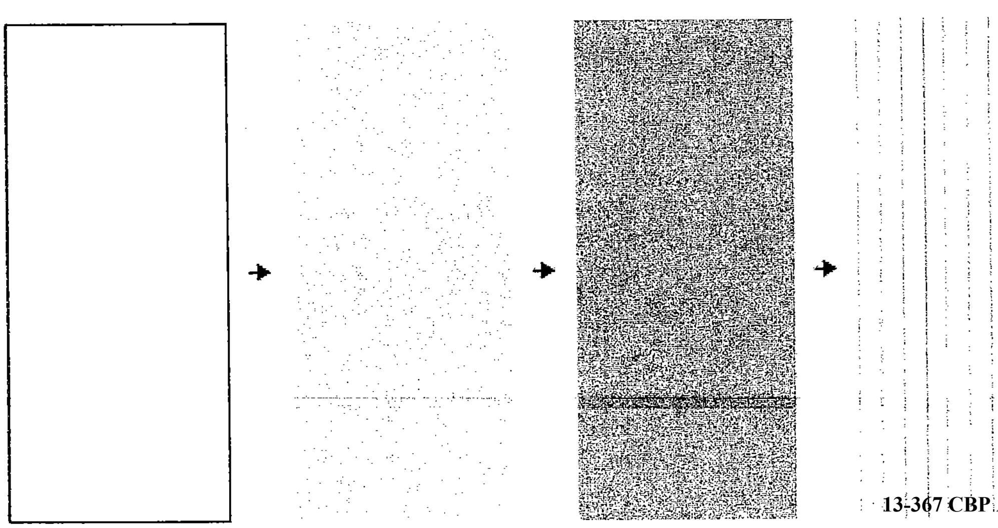
**MANUFACTURING PROCESS OF METALLIC YARN**

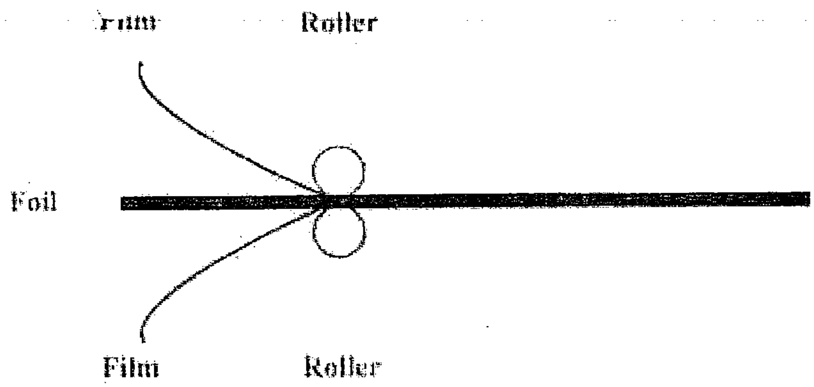
**Extrusion And Metal Coating**

The incorporation of metal into textiles dates back to the Roman era, when they were mainly used for decorative purposes. The tinsel yarns used to add glitter to fabrics were made by flattening thin wire or sheets of noble metals like gold or silver. By the 1930s, aluminium foil strips coated on both sides by cellulose acetate-butyrate, to prevent them from tarnishing, were used. The yarn could be colored by anodizing. All of these yarns had poor compatibility with the more flexible and extensible textile yarns. After the development of vapor-deposited aluminized polyester in the 1960s, 1 mm wide strips of these films were used as yarns, with much improved flexibility.

The American made yarns can best be described as a ham sandwich. The metal foil, metallised pigment and colouring matter might be considered the meat. The meat is placed between two layers of transparent plastic film. The adhesive used between layers to bind all the layers together into one film might be compared to the butter that holds the bread and meat together.

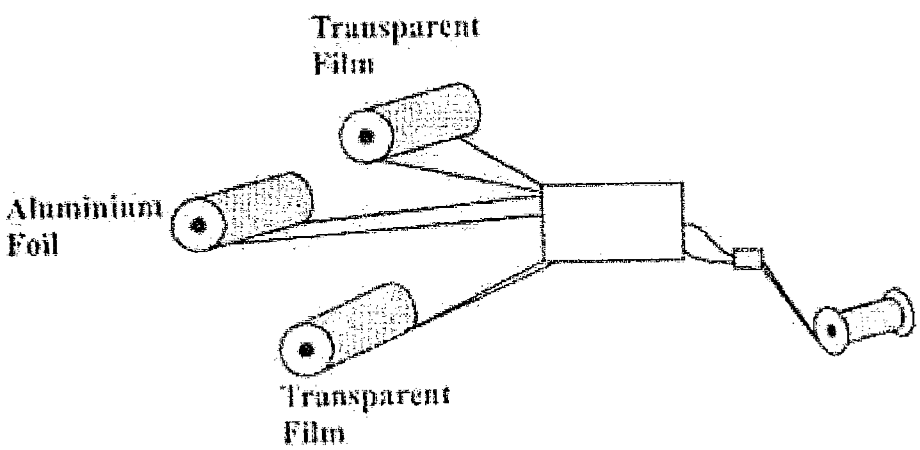
The raw material is a roll of aluminium foil of 0.00045 inch thickness and 20 inch wide. To both sides of the sheet is applied a thermoplastic adhesive to which has already been added the required colouring matters. The adhesive-coated foil is heated to about 90-95Â°C, and a sheet of cellulose acetate-butyrate transparent film is laminated to each side of the foil by passing through squeeze rollers at a pressure of 2000 lb/in (Fig. I). The laminated material is then slit into filaments of the required width, the most popular width being 1/64 inch although other sizes from 118 inch to 1/120 inch are also made.






Transparent Sheet Aluminium Coated Sheet Dyed Sheet After Cutting Sheet

The nature of the adhesive that is used is important and not usually disclosed. Gold is the most important colour which is produced by the addition of an orange-yellow dyestuff to the adhesive. Silver is simply the colour of the aluminium itself. Other colours such as bronze, peacock blue and red are obtained by using the suitable pigment. Multi-coloured efects, e.g. red and green alternating irregularly along the length of the yarn, are obtained by pre-printing the plastic film and laminating in the usual way.




**METHODS OF METAL COATING**

**A. Metal coating with a binder:**

The process is similar to conventional polymer coating. High leafing aluminium pastes (65-70%) are incorporated into a polymeric carrier, like synthetic rubber, PVC, polyurethanes, silicones, acrylic emulsions, etc., and spread coated on the fabric. The coating method may be conventional knife or roller coating. The adhesion, flex, and chemical resistance of the coated fabric depend on the type of polymer used, but they are not highly reflective.

**B. Vacuum deposition:**

In this process, the substrate to be coated is placed in a chamber over a set of crucibles containing the metal to be coated in the form of a powder/wire. The chamber containing the whole assembly is evacuated to 0.5-1 torr. The crucible is heated by resistance heating to melt the metal. The temperature of heating is so adjusted that the vapour pressure of the metal exceeds that of the chamber pressure, so that substantial evaporation of the metal takes place. The temperature required for aluminium is about 1200Â°C. The roll of web to be coated is passed over a cooled drum placed over the crucibles. The metal atoms coming out of the molten metal hit the surface of the web to be coated and condense in the form of solid metal as it passes over the crucible. The production speed is quite high, ranging from 150-500 m/min. The items to be coated should be pretreated for proper adhesion of the metal. Continuous metal film coatings can be formed on just about any surface, film, fiber or fabric with thickness ranging from micron to millimeter. Several metals can be vacuum evaporated, most common being aluminium, copper, silver, and gold. Difficulty arises in the case of metals, which sublime rather than melt and boil.

**C. Sputter coating:**

The equipment consists of a vacuum chamber containing an inert gas, usually argon, at 10-3 to 10-1 torr. The chamber is equipped with a cathode (target), which is the source of the coating material, and an anode, which acts as a substrate holder. Application of an electrical potential of the order of 1000 VDC, between the two electrodes, produces a glow discharge. A flow of current occurs due to movement of electrons from cathode to anode. The electrons ionize the argon gas. The argon ions are accelerated toward the cathode at a high speed due to high electric potential. Bombardment of the energetic ion on the target results in a transfer of

momentum. If the kinetic energy of the striking ion is higher than the binding energy of the surface atoms of the material of the target, atoms are dislodged or sputtered from its surface by a cascade of collisions. Typically, the threshold kinetic energy of the ions should be between 10-30 EV for sputtering from the surface. Some of the ions striking the target surface generate secondary electrons. These secondary electrons produce additional ions, and the discharge is sustained. Considerable heat is generated during the sputtering process, and it is necessary to cool the target. The sputtered atoms and ions condense on the substrate to form a thin film of coating. The relative rates of deposition depend on sputter yield, which is the number of atoms ejected per incident ion. The sputtering yield varies with the target material and increases with the energy of the incident ion. The method is applicable to a wide range of materials and gives more uniform coating with better adhesion than simple vapour deposition. The process is however, more expensive, and the rate of deposition is lower (30 m/min)

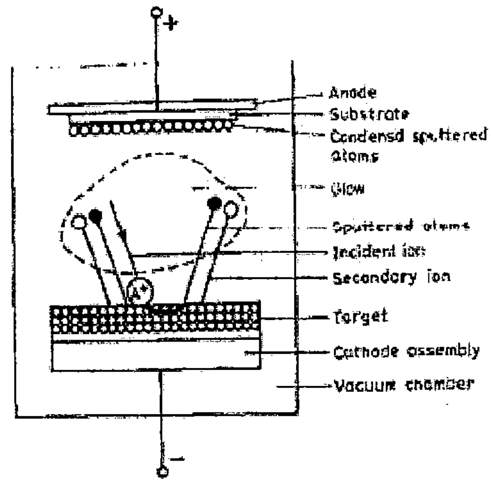



Figure 8.3 Sputtered coating process.

**D. Electroless plating:**

It is a process to deposit metal film on a surface, without the use of electrical energy. Unlike electroplating where externally supplied electrons act as reducing agent, in electrodes plating, metallic coatings are formed as a result of chemical reaction between a reducing agent and metal ions present in solution. In order to localize the metal deposition on a particular surface, rather than in the bulk of the solution, it is necessary that the surface should act as a catalyst. The activation energy of the catalytic route is lower than the homogeneous reaction in solution. If the deposited metal acts as a catalyst, autocatalysis occurs, and a smooth deposition is obtained. Such an autocatalytic process is the basis of electroless coatings. Compared to electroplating, electroless coating has the following advantages:

(l) Nonconducting materials can be metallized

(2) The coating is uniform.

(3) The process is simple and does not require electrical energy

Electroless coating is, however, more expensive.

For successful deposition of coatings, only autocatalytic reduction reactions can be used. As such, the numbers of metals that can be coated are not many. Some of the common reducing agents are sodium hypophosphite, formaldehyde, hydrazine, and organo boron compounds. Each combination of metal and reducing agent requires a specific pH range and bath formulation. The coating thickness varies between 0.01 um to 1 mm.
A typical plating solution consists of
a. Metal salt

b. Reducing agent

c. Complexing agents, required in alkaline pH and also to enhance the autocatalytic process

d. Buffers

e. Stabilizers, which retard the reaction in the bulk and promote autocatalytic process.

**Some important metal coatings are discussed below:**

**a. Copper:**
The most suitable reducing agent is formaldehyde. The autocatalytic reaction proceeds in alkaline pH (11-14). The commonly used complexing agents are EDTA, tartarate, etc.



**b. Nickel:**

Sodium hypophosphite is the most popular reducing agent for nickel. The autocatalytic reaction occurs in both acidic and alkaline pH. Sodium citrate is used as buffer and complexing agent. The coating obtained by sodium phosphite also contains phosphorus (2-15%).

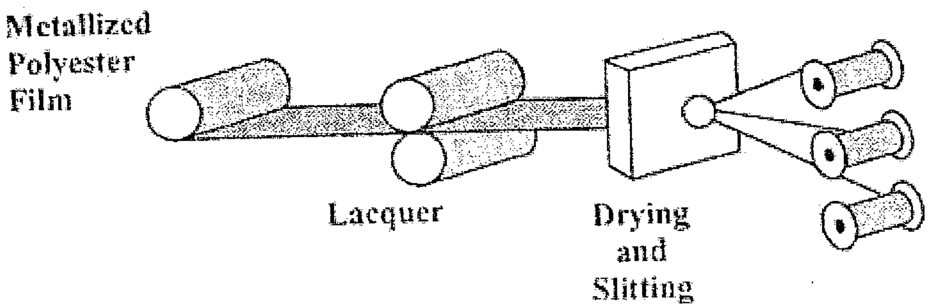
**c. Silver:**
The plating solution consists of ammoniacal silver nitrate with formaldehyde, hydrazine, and glucose as reducing agents. Because the autocatalytic activity of silver is low, thick deposits cannot be obtained. Electroless plating of textiles is being adapted for different functional applications.

**SLITTING OPERATION**

The slitting operation involves the two main types of cutting by which a metallised polyester film is converted into the tape filaments:
(a) Rough Slitter
(b) Micro Slitter

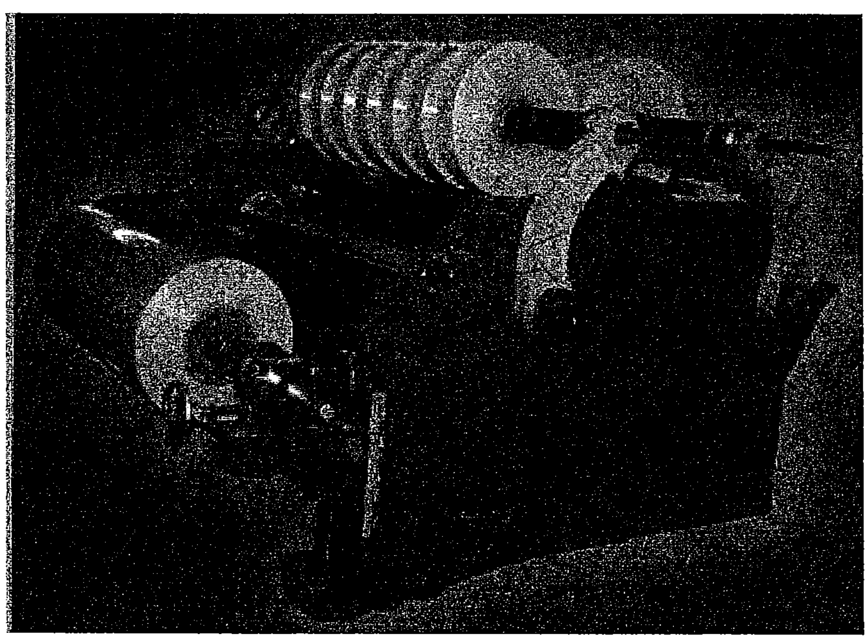
The metallized polyester film supplied to the slitting operation has the following parameters:

(1) Thickness: Normally ranges between 12 to 25 Microns.
(2) Length: Sheet in the form of roll having the length from 5000 to 10,000 meters.
(3) Width: The width of the sheet ranges between 510mm to 1000mm.




**ROUGH SLITTER**

his slitter cuts the large polyester sheet into Pancakes. The width of the each Pancake is 54mm. In addition side strips of 2mm are kept extra on each side. Thus the resultant width of the pancake is 58mm.
Cutters of different size are used for this operation, for example 0.2mm, 0.23mm, 0.25mm, 0.30mm, 0.376mm, etc. Pancakes are also in the form of rolls supplied to the Micro Slitter.



**MICRO SLITTER**

The Micro Slitter is a general name given to both slitter and winder for producing the yarn 0.15mm -1 mm wide.

13-367 CBP AR000284

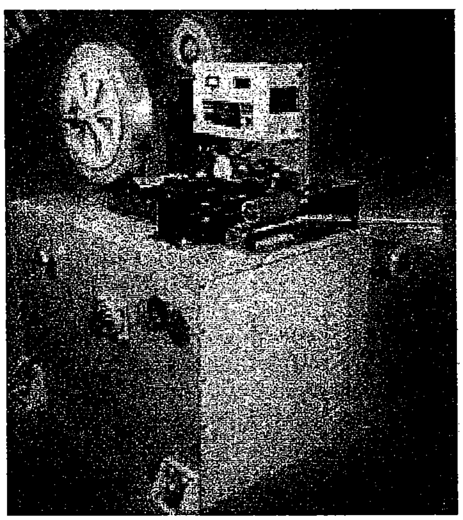
In this operation Pancakes are converted into numbers of tape filaments. It has two main parts,
(a)Cutting Mechanism

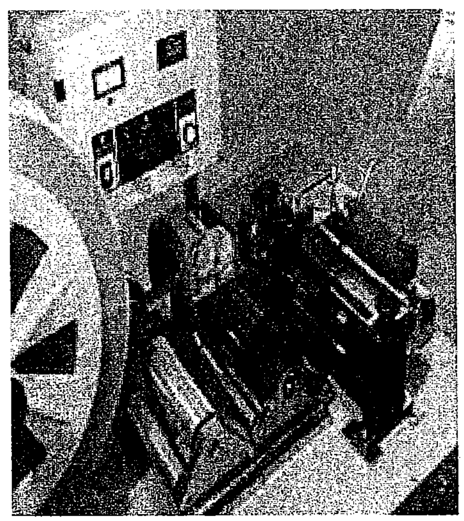
(b) Winding Mechanism

Cutting of Pancakes and Winding of tape filaments are carried out simultaneously.

The cutting mechanism consists of two parallel shafts. On each shaft blades are mounted side by side such that the edge of one blade on one shaft slightly touches the edge of the blade mounted on the other shaft. The cutter is mounted on to the shaft with the help of Separator and Support Ring. The width of the tape filament decides the width of the cutter.

The winding mechanism consists of number of winding positions. The winder is driven by a separate motor. The traverse mechanism is also provided for obtaining the parallel wound package. The speed of the winder is 2.5% to 5% higher than that of the cutter.



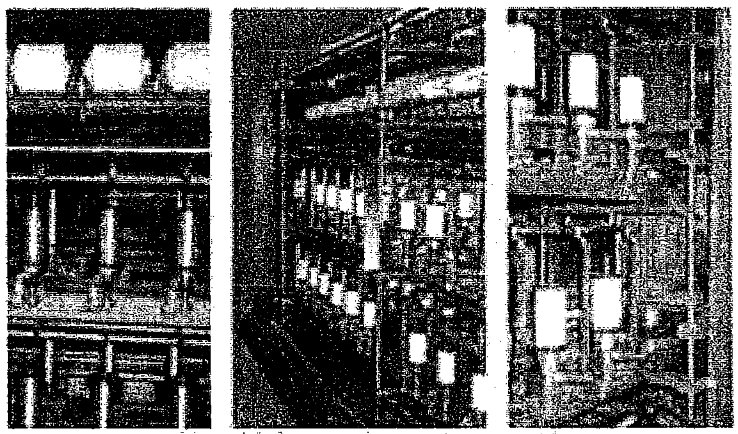


**COVERING MACHINE**

Nowadays machines can produce a high quality of covering yarns for even 200, 300, denier of polyester yarn, cotton and even silk, which is applied to stocking, socks and particularly woven elastic fabrics.

The important characters of the machine are the balance and the alignment of spindles and guide rollers. It is well designed for flexibility and anti-wearing by using good quality of materials to each part of character. The specification of machine can be changed according to a pitch and number of spindles.

Production process of polyester covered yarn



New high speed covering machine

**GENERAL APPLICATION**

Metallized products are used in industrial, specialty and protective clothing applications. There are various ways to combine metals with textile materials for specific applications.
Metallized fabrics provide good abrasion resistance, reflectivity over extended time, wear resistance and molten metal splash resistance.

**Coating/Laminating**

Textile fabrics are used as substrates in metallized protective materials. Woven, knit and nonwoven fabrics may be coated or laminated with metal surfaces. Substrate fabrics can be made of aramids, carbon based fibers, PBI, glass, cotton, rayon and others. Aluminum is widely used in metallized fabrics.

In aluminized fabric, aluminum molecules are deposited on a PET film. Examples are Mylar from DuPont and Hostaphana from Hoechst. The aluminized film can reflect up to 90% of radiant heat. Gold can be used for reflection of up to 100%, but it is expensive.

Laminated metallized fabrics can be made of several layers of materials. A typical five-ply dual mirror
aluminized fabric has the following layers: aluminum, protective film, a second layer of aluminum, heat stable adhesive and fabric.

**Blending**

Metal sliver can be blended with synthetic or natural fibers to produce conductive textiles. Stainless steel sliver used for this purpose usually has 4.8 or 12 micron fiber diameters and weighs approximately 1.2 or 4 grams. The fiber length may vary from 1.5 to 6 inches. There are several methods to produce metal fibers including bundle drawing (most common), wire drawing, shaving, shearing, melt spinning, melt extracting and stretch casting. For maximum conductivity, the steel fiber is introduced at the last drawing operation. Protective fabrics made from metal-based blended fibres are suitable to protect individuals from the hazardous effects of electrostatic discharge and electromagnetic radiation.

**Composite Yarns**

Multi-filament metal fibre yarns can be twisted or wrapped with textile yarns to produce composite yarns. These yarns are suitable for cut resistant apparel items, antistatic brushes for business machines, lightning strike protection and antistatic filter bags. The most widely used metal yarns are 12 microns/91 filaments, 25 microns/91 filaments.

**Nonwoven Metal Based Fabrics**

Chopped metal fibres can be air or wet laid with textile fibers to form nonwoven textiles. For air layering, 1-inch fiber length and 4-38 micron fiber diameters are used. For wet layering, fiber lengths of 0.125 to 0.5 inch have been successfully used. Binders or sintering may be used for stabilization. During sintering, the organic binder fibers are burned off, leaving a 100% metallic fiber structure. In

general, fiber diameters of 4-15 microns in 0.125-0.250 inch lengths are suitable for this process
Test methods and characteristics to evaluate the metallized products include the following:

â€¢ Military Specification, MIL-C-87076A, for Aluminized, Twill Weave, Aramid, Coated Cloth
â€¢ MIL-C-24924A Class I (fire proximity garments)

Applications in technical textiles:

Following Attributes of fibres make them suitable for applications in technical textiles:
â€¢ Electrical Conductivity
â€¢ Electro Magnetic Shielding
â€¢ Anti-Microbial
â€¢ Heat Resistance
â€¢ Strength
â€¢Chemical Reactivity
â€¢ Corrosion Resistance
â€¢ Flexibility (compared to wire or steel wool textile structures)
â€¢ Weldability

**Existing and Potential Applications:**

Given the above product characteristics, some existing and potential applications are as follows:

**Existing Applications:**

1 Anti-static protective clothing garments in the Petro-chemical, pilot suits, fire workers suits, etc.
a. Anti-static fabric panels for garments
b. ESD shoe soles and Overshoes
c. Sewing threads for connection of fabric panels for improved sleeve-to-sleeve
ESD compliance.
2. Shielding fabrics for utility workers in high field areas.
3. Muscle stimulation electrodes.
4. ESD Brushes.
5. Bulk container bags for powders and pellets.

**New developments:**

a) Multi-Functional Textiles
b) Sensing yarn, woven/knitted into garments.
c) Intelligent textile applications.
d) Heatable textiles as the heating element.
e) Conductive seam ribbons for Clean room garments.
f) Stimulation electrodes knitted into garments.
g) Weavable /knittable lead wires.
h) Heatable textiles.
i) EMI Shielding wall-coverings and other textile structures.

**METAL FIBRE PROPERTIES**

**Metal Fiber Fineness**

Due to its history as a wire drawn product and its abnormally high specific gravity, metal fiber sizes are typically described in terms of their actual diameter in microns as opposed to their linear weight in denier. As an illustration, a single human hair is 70 micron in diameter, and the current working range of bundle drawn stainless steel fibers is from 1- micron diameter to 100-micron diameter. Most textile applications utilize fibers in the range of 8 to 14 microns. As a way of comparison with polyester, a 12-micron metal fiber has the same diameter as a 1.4 denier polyester fibre.

**(a) Electrical Conductivity / Electro-Magnetic Shielding**

Certainly, the most distinguishing property of metal fibers is its electrical conductivity. When compared on a sq.cm basis, metal fibers can be classified as true conductors. Carbon fibers and anti-static finishes, on the other hand, are electrically classified as Semi-conductors. These differences can be significant in anti-static applications where atmospheric humidity is low and washing durability is an issue. Tests have been run on fabrics with a grid of stainless steel spun yarns where the same anti-static behavior is maintained after more than 200 wash cycles. In Europe it is reported that stainless steel is the only fiber type to consistently exceed EN 1149 after washings.

This high electrical conductivity also leads to good EMI shielding characteristics. Stainless steel fibers have long been utilized as an additive to plastic casings as a way to shield internal components from electromagnetic radiation. As concerns around EMI shielding grow, these conductive plastic applications have expanded a variety of textile applications for metal fibers. Garments, seals, gaskets and wall-coverings are all commercial application areas for shielding fabrics. There is even ongoing research into the possible therapeutic value of such fabrics for various medical treatments.

**(B) Heat Resistance and Strength:**

Since the early 1990â€™s a growing market segment for solid metal fibers has developed in the area of industrial, heat-resistant textiles. There exist many industrial environments that operate above the long-term working temperature of fiber glass and aramid fibers. This is especially true in glass forming processes where temperatures can range from 450 to 6000 C. In this particular application, there are other fibers that can withstand these temperatures from decomposition or melting standpoint, but they experience such a significant loss in strength or flexibility, that their resistance to mechanical load dramatically affects the fabric life.

Yet another important attribute to metal fibers is the ability of certain metals to behave in a chemically inert way, regardless of the environment that they are exposed to.

**MANUFACTURING BRAND**

Metallic yarn of the type discussed here is manufactured by American and French firms under different trade names. Some of these are:-

| | |
|---|---|
| Dow Chemical Co. | Lurex |
| Fairtex Corp. | Fairtex |
| Melton Corp. | Melton |
| Reynolds Metals Co. | Re Aluminium |
| Standard Yarn Mills | Lame |
| Sildorex SA,France | Lurex C, Lurex TE. |

Metal-foil and metal-coated yarns are characterised by a flat ribbon-shape with knife-slit edges. Metallic fibres of this type are now widely used in the textile industry and are popularly known as â€œLurexâ€ yarn (Trade name).

The main constructions of metallic yarns in order of commercial importance are as follows:

i) Mono ply yarns made from polyester film of 12 or 24 um thickness, metallised and coated both sides either with dear or coloured lacquer (Lurex C 50 and C 100) or with heat and chemical resistant resin-lacquer (Lurex-TE and TE 100). Lurex TE 50 and TE 100 are non-tarnishing and have greatly enhanced resistance to scouring and dyeing treatments of suppleness, brilliance, and yield.

ii) Laminated yarns based on one layer of aluminium foil sandwiched between two layers of 12 um thick polyester film using clear or coloured adhesives (Lurex MF 150). This yarn has higher strength and abrasion resistance.

iii) Mono ply yarns made from 12 um polyester film (transparent - Lurex N 50) or treated with a surface dispersion to give a rainbow effect (Lurex N 50 Irise).

iv) Lurex yarn types C 50, N 50 (Transparent and Irise), and TE 50 can also be obtained supported with two ends of either 17 dtex or 33 dtex monofil nylon. Metallic yarns are usually described in terms of the nominal thickness of the composite film(s) and not the overall thickness of the yarns; the thickness of the resin-lacquer coating or adhesive layer is ignored.

**Chemical nature:**

The modern and cheap metallic yarn consist of filaments of aluminium covered with plastics: two kinds of plastics are mainly used for the covering. The first and most common is cellulose acetate-butyrate and the second and better is Mylar, DuPontâ€™s polyester film which is chemically similar to Dacron and Terylene. The mixed ester of cellulose with acetic and butyric acids is used more popularly than cellulose acetate, mainly because it has a lower melting point and is more easily worked.

**Lurex MM**

Lurex MM is different from other varieties of Lurex which consist of a sandwich of aluminium between two films of cellulose acetate-butyrate or Mylar. Lurex MM has a basis of metallised Mylar produced by the vacuum deposition of aluminium on Mylar film. A layer of metallised Mylar is either, (a) bonded to one layer of clear Mylar or (b) sandwiched and bonded to two layers of clear Mylar.

Colour is introduced with the adhesive. The important difference is that the metallic layer in Lurex MM consists of discrete particles and not a continuous ribbon. This construction gives Lurex MM particular softness and thinness, and it affects some other properties, too.

**Width and yield:**

The ribbon-like shape of metallic yarns makes width an important factor and all Lurex designations bear a width reference. The amount of yarn cover and metallic lustre of a fabric depends upon the width. Lurex is slit to seven standard widths: 1/128, 1/100, 1/80, 1/64, 1/50, 1/32 and 1/16 inch. The 1/64 inch width is established as standard for weaving and knitting yarn. The various types and widths of metallic yarns are not designated by any standard textile yarn numbering system. Yields are in yards per pound.

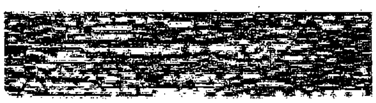
**Gauge:**

Metallic yarns are described by width and by gauge. The gauge is the thickness in one hundred thousandths of an inch of the two layers that form the Lurex sandwich. The gauge figure does not indicate total yarn thickness because it does not take into account the adhesive, pigment or the aluminium layer. For e.g., 260 Butyrate Lurex consists of two layers of 0.00130 inch cellulose acetate-butyrate with a 000045 inch aluminium foil and adhesives between its total thickness is 0.003 2 inch, indicating that the two layers of adhesives must each be about 0.0008 inch. A 260 gauge 1/64 inch yarn yields about 10,500 yards per lb. corresponding roughly to about 430 denier, 1 gauge = 0.00001 inch.

**Supported Lurex:**

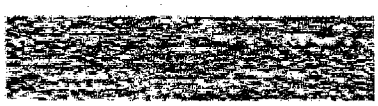
When additional strength and/or special effects are desired, Lurex is available in combined form. Most combining yarns are continuous filament yarns: silk, nylon, fortisan, cotton and rayon are commonly used. Combining is usually done on a hollow spindle twister and is carried out in such a way that the metallic yarn remains flat and the supporting yarn wraps around it. The number of turns per inch in the support yarn can vary but usually number 6.
a) All properties are based on 1/64 inch width yarn gold and silver only.
b) Reflectance results are reported from photo volt reflectometer with green filter against an ASTM standard measuring 89.9%.
c) Some â€˜whiteningâ€™ can occur on Lurex at boil. This is due to a mechanical pick up of water by the bonding adhesive or protective film and may be cleared by drying.
d) Flammability is evaluated on fabrics. Figures reported are typical for Lurex provided that the accompanying fibres and/or finishes do not influence the behavior of Lurex

DARK GOLD

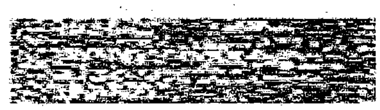


SATIN GOLD

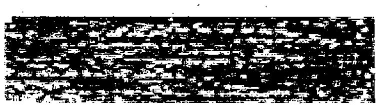
SILVER



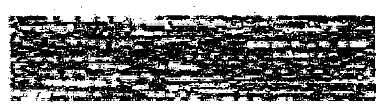
WHITE GOLD



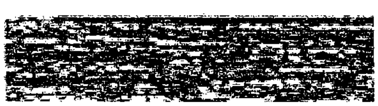
WHITE GOLD/BLK



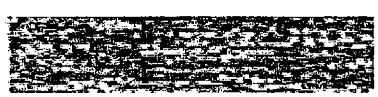
LILAC



PEACH



PINK



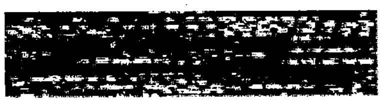
TURQUIOSE

FIESTA RED

COPPER

FUSCHISA

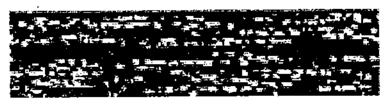
EMERALD GREEN



ROYAL PURPLE

CLARET

STEEL GREY



**Properties:**

**i) Chemical resistance:**
Metallic yarns, although protected at the top and bottom of their flat sides, are vulnerable at their cut sides. However, as the area exposed is small, tarnishing due to atmospheric exposure is negligible. Chemical attack is serious only if the chemical is one that dissolves aluminium. Any of the Lurex yarns, if immersed in caustic soda, loses metal due to the aluminium dissolving in caustic soda through the cut side of the yarn. Lurex MM is unaffected by 2% hydrochloric acid at 99Â°C for 2 hours whereas Lurex MF loses metal.

**ii) Strength:**
Strength of the acetate - butyrate Lurex yarn is not very high, but is sufficient to enable it to be used as warp or weft unsupported. The Mylar coated yams are much stronger because of the strength of the polyester film. They can be used for weaving and knitting.

**iii) Heat:**
The acetate-butyrate-coated metallic yarns can be washed at temperatures as high as 70Â°C, otherwise delamination occurs at higher temperatures. Mylar coated yarns can be washed at boil and are safe upto 145Â°C.

**Identification:**

The following procedure will identify the three standard types of Lurex yarn:

1. Burn yarn sample - butyrate Lurex yarn has a rancid odour.

2. Immerse in isopropyl alcohol - butyrate Lurex (film portion) will dissolve, Lurex MM and Lurex MF are insoluble.

3. Stretch yarn sample - Lurex MM and Lurex MF exhibit a stretch of 120-150%, butyrate Lurex will stretch about 20-30%. The aluminium in Lurex MF fractures (separates) on stretching, the aluminium in Lurex MM does not fracture on stretching.

| LUREX GEN...AL TECHNICAL DATA SHEET | | | |
|---|---|---|---|
| TEST | CONDITIONS | TEMP./TIME | RESULT |
| Laundry | 0.5% (5gr./liter) soap | 40°C 20 min. | OK |
| Dry cleaning | Perchloretylene 100% | 20°C 30 min. | OK |
| Ironing | | 135 °C, 15 sec. | OK |
| Hot water | | 70 °C, 30 min. | OK |
| Steam | | 100 °C 10 min. | OK |
| Dry heating | | 100 °C, 60 sec. | OK |
| Scouring | 1-2 gr/litre detergent only | 70 °C 15 min. | NO |
| Overdye wool and nylon | 1 gr./litre acetic acid, X% acid dyestuff | 90 °C 30 min. | NO |
| Bleaching | Sodium hydrosulfite 2.0 gr./liter | 70-80°C 30 min. | NO |
| Bleaching | Soda ash 0.5g/litre | 70-80°C 30 min. | NO |
| Bleaching | Ph 9, 30% hydrogen peroxide | 70-80°C 30 min. | NO |
| Bleaching | 10% sodium hydroclorite 40 gr./litre | 70-80°C 30 min. | NO |
| Caustic soda | | 28 Be' 21°C | NO |

**SUMMARY:**

Constantly being designed with new and multiple functionality, it is an exciting time to be a part of the metal fibre industry. Metal fibres can most assuredly help to take textiles into areas they have never been before.

**About the Author:**

Anita Desai is working as a Senior Lecturer at the Sarvajanik College of Engineering & Technology since June 1997. She is a B.Tech and an M.Tech from the Government S.K.S.J.T. Institute, Bangalore. She is currently pursuing her Ph.D. from the Central Silk Technological Research Institute, Central Silk Board, Ministry of Textiles, Government of India, Bangalore.

She has to her credit over 30 research and review publications and presentations at both, the national and international level. Her biographical profile has been included in the premier edition of Marquis **Whoâ€™s Who in Asia â€" 2007**. She can be contacted on: aap_desai@yahoo.co.in

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www.technicaltextile.net

# Metallic Yarns and Fibres in Textile

This paper deals with the types of metal yarns, known for about 3000 years, their manufacturing processes, care and maintenance, uses of metallic yarns and fibers in the textile and other industries; in general the metal yarns are used in sarees known as "zari". Recently it has found new application in electronic textiles, better known as "smart textiles". These yarns have also entered into the fiber and fashion industry. The gold and silver filaments were the first synthetic yarns. As technologies developed, the coated and different colored metallic yarns are being produced for various applications.

G. Mohan Kumar, V. S. Sidharth

# Metallic Yarns and Fibres in Textile

G. Mohan Kumar, V. S. Sidharth

Department Of Textile Technology, Bannari Amman Institute of Technology, Sathyamangalam, Erode Dt.

## Abstract

This paper deals with the types of metal yarns, known for about 3000 years, their manufacturing processes, care and maintenance, uses of metallic yarns and fibers in the textile and other industries; in general the metal yarns are used in sarees known as "zari". Recently it has found new application in electronic textiles, better known as "smart textiles". These yarns have also entered into the fiber and fashion industry. The gold and silver filaments were the first synthetic yarns. As technologies developed, the coated and different colored metallic yarns are being produced for various applications.

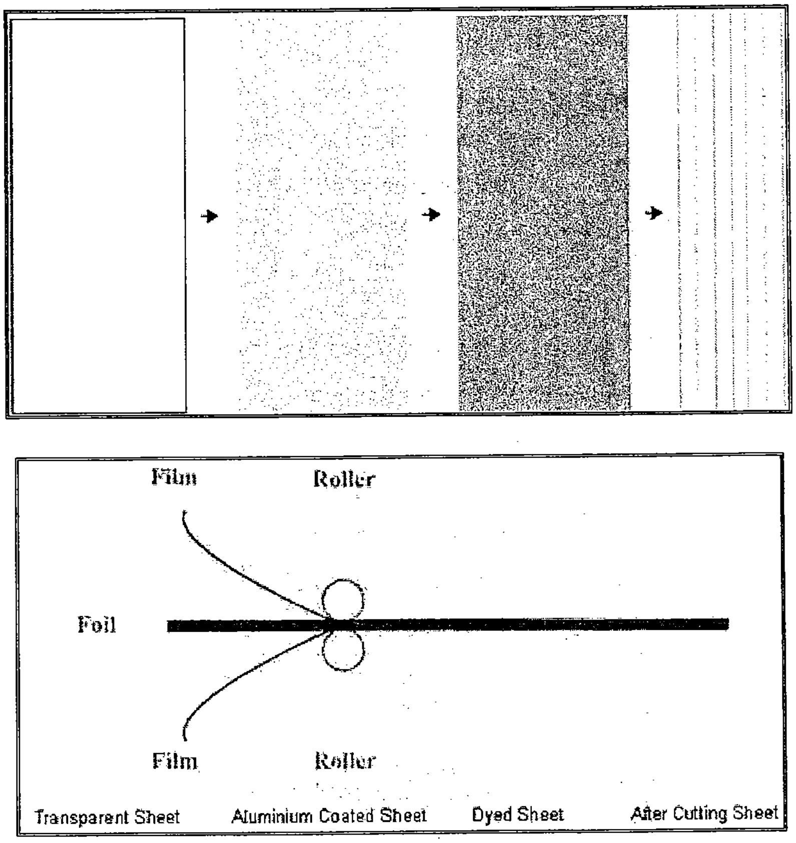
## Introduction

Metallic yarns have found its applications in various fields of textiles like conductive textiles, smart textiles, and fashion industry. Gold and silver filaments were the first man made yarns, as revealed by the history. In recent years, with the advancement in the technologies, new colored and coated metal fibers and yarns are being produced now a days. These yarns are wrapped around some of the natural yarns like cotton to make them conductive and these yarns have found intensive place in the technical textiles.

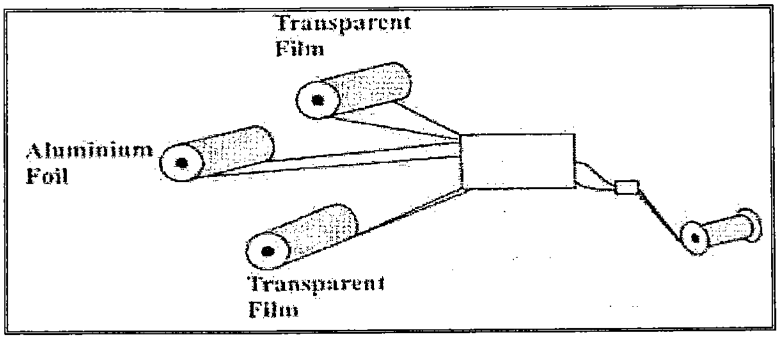
## Manufacturing Process of Metal Yarns

The raw material used is a roll of aluminum foil of 0.00045-inch thickness and 20 inch wide. On the both sides of the sheet a thermoplastic adhesive is applied, and the required coloring matters is also added. Then the adhesive-coated foil is heated to about 90-95°C, and a sheet of cellulose acetate-butyrate transparent film is laminated to each side of the foil by passing through squeeze rollers at a pressure of 2000 lb/in. The laminated material is then slit into filaments of the required width; the most popular width being made is 1/64 inch although other sizes from 118 inch to 1/120 inch are also made.

Manufacturing process of metal yarns




The nature of the adhesive that is used is important and not usually disclosed. Gold is the most important color, which is produced by the addition of an orange-yellow dyestuff to the adhesive. Silver is simply the color of the aluminum itself. Other colors such as bronze, peacock blue and red are obtained by using the suitable pigment. Multi-colored effects, e.g. red and green alternating irregularly along the length of the yarn, are obtained by pre-printing the plastic film and laminating in the usual way.



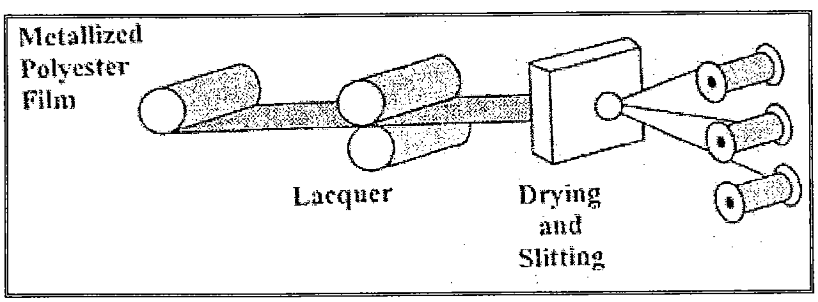

## Slitting Operation

The slitting operation involves the two main types of cutting by which a metalized polyester film is converted into the tape filaments:

- Rough Slitter
- Micro Slitter

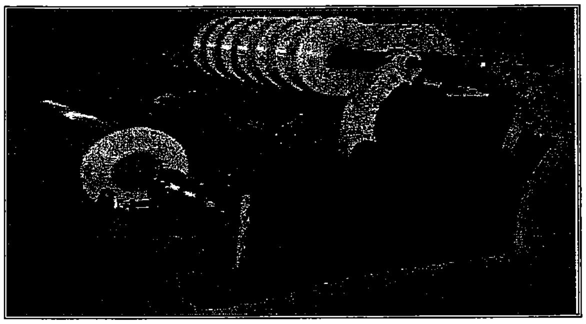
The metalized polyester film supplied to the slitting operation has the following parameters:

**Thickness:** Normally ranges between 12 to 25 Microns.
**Length:** Sheet in the form of roll having the length from 5000 to 10,000 meters
**Width:** The width of the sheet ranges between 510mm to 1000mm.




## Rough Slitter

This slitter cuts the large polyester sheet into Pancakes. The width of the each Pancake is 54mm. In addition, side strips of 2mm are kept extra on each side. Thus the resultant width of the pancake is 58mm. Cutters of different size are used for this operation, for example 0.2mm, 0.23mm, 0.25mm, 0.30mm, 0.376mm, etc. Pancakes are also in the form of rolls supplied to the Micro Slitter.

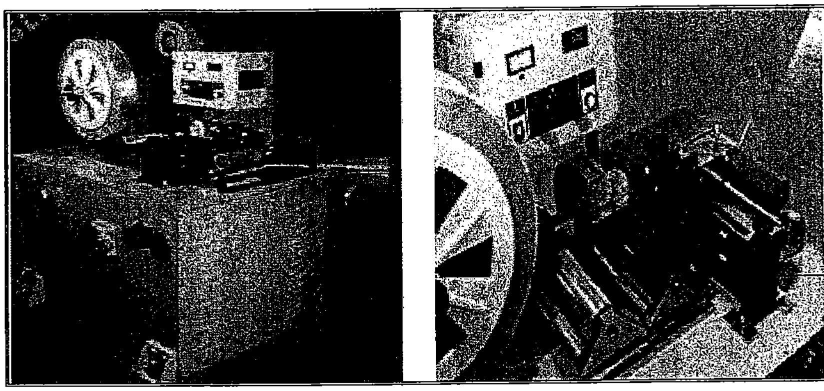


## Micro Slitter

The Micro Slitter is a general name given to both slitter and winder for producing the yarn 0.15mm -1 mm wide.

In this operation, Pancakes are converted into numbers of tape filaments. It has two main parts, cutting mechanism and winding mechanism. Cutting of pancakes and winding of tape filaments are carried out simultaneously.

The cutting mechanism consists of two parallel shafts. On each shaft, blades are mounted side by side such that the edge of one blade on one shaft slightly touches the edge of the blade mounted on the other shaft. The cutter is mounted on to the shaft with the help of Separator and Support Ring. The width of the tape filament decides the width of the cutter.
The winding mechanism consists of number of winding positions. The winder is driven by a separate motor. The traverse mechanism is also provided for obtaining the parallel wound package. The speed of the winder is 2.5% to 5% higher than that of the cutter.



## Fine Structure and Appearance

Metallic fibres are flat, ribbon-like filaments, commonly 3.2-0.2 mm (1/8-1/128 in) width. They are smooth-surfaced, and may be colored or uncolored.

| Properties | Acetate Butyrate, Foil | Polyester, Foil | Polyester, Metalized |
|---|---|---|---|
| Tenacity | 2.6 cN/tex (0.3 g/den) | 6.2 cN/tex (0.79 g/den) | 11.0 cN/tex (1.25 g/den) |
| Elongation | 30 % | 140 % | 140 % |
| Elastic Recovery | 75 % at 5% elongation | 50% at 5% elongation | 100 % at 5 % elongation |
| Flex Resistance | 1 | 18 | 70 |
| Abrasion Resistance | fair | good | excellent |

| | | | |
|---|---|---|---|
| Effect of Moisture Regain | 0.1 % | 0.5 % | 0.25 % |
| Softening point | 205°C | 232°C | 232°C |
| Ageing | Nil | Nil | Nil |

## Types of Metallic Yarns

1. **Acetate Butyrate, Aluminum Foil**: A continuous flat monofilament composed of aluminum foil laminated on both reflective surfaces with cellulose acetate butyrate film.
2. **Cellophane Aluminum Foil**: A continuous flat monofilament composed of aluminum foil laminated on both reflective surfaces with Cellophane film.
3. **Polyester, Aluminum Foil**: A continuous flat monofilament composed of Aluminum foil laminated on both reflective surfaces with polyester film.
4. **Polyester, Aluminum Metalized Polyester**: A continuous flat monofilament composed of aluminum Metalized polyester laminated on its Metalized surface or surfaces with polyester film.
5. **Polyester, Aluminum Metalized, Non-Laminated**: A continuous, flat monofilament composed of a single layer of aluminum Metalized polyester protected on its Metalized surface.

## Properties of the Metal Yarns

- Highly conductive
- Radar reflective
- Light weight
- Flexible
- Antistatic behavior
- Cut resistant

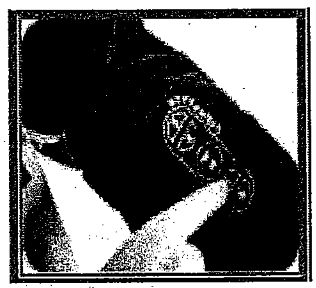
## Types Of Metal Coating

- Metal coating with a binder

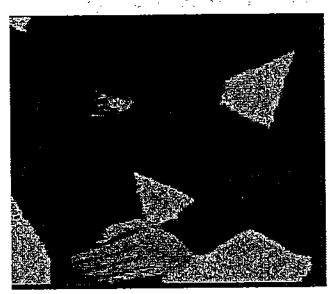
- Vacuum deposition
- Sputter coating
- Electroless plating

## Metal Yarns In Interactive Electronic Textile

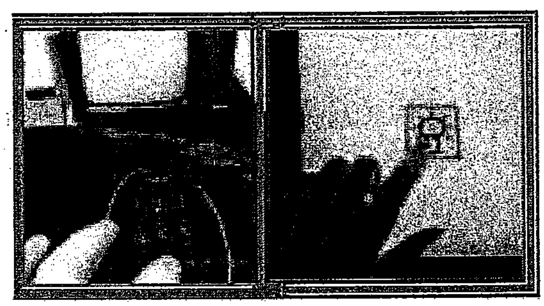
The following figures shows the use of metal yarns in interactive electronic textile

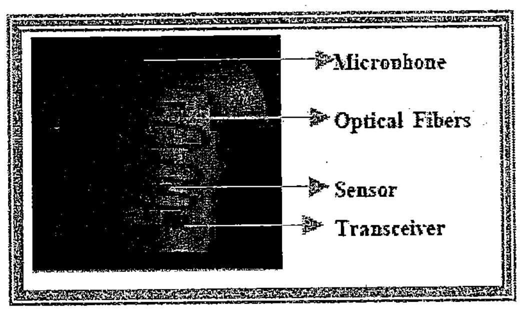


Integrated textile keypad

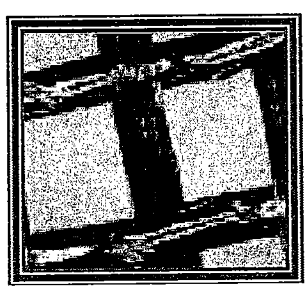


sleeve integrated communication device






(Left) remote control (Right) light switch smart shirt



Micrograph of metallic silk organza

## Uses of Metallic Yarns/Fibres in Textiles and Fashion

Metallic yarns are not only used for decorating clothing and other fashion accessories. As these coated metallic filaments do not stain when suitable adhesives and films are used, they are not affected by salt water, chlorinated water in swimming pools or climatic conditions; they are most effective for making protective cloths and work cloths. Thus, these yarns are used for both, functional as well as decorative purposes.

1. The most common application of metallic fibers are in making upholstery fabrics like lame and brocade which are then used for making luxurious curtains, sofa covers etc.
2. Steel fibers are used in making carpets where they are dispersed along with other fibers. These fibers help to conduct electricity so that the static shock is reduced. Such carpets are often used in high volume computer areas where the chance of producing static shock is much greater.
3. As they are shock resistant, the metallic fabrics are also used in space suits, protective clothing, cut resistant gloves of butchers, and in garments for people who work with risky machinery.
4. These fibers are sometimes twisted with other fibers like wool, cotton, synthetic, and nylon to make yarns, which give extra attraction to the finished garments.
5. Fashion designers often use these fibers to make ultra glamorous apparels for giving that extra edge to their clothing lines. Metallic fabrics of gold, silver and bronze are hot favorites with these professionals.
6. When not in cloths, they can be found on other fashion accessories such as handbags, belts, and even shoes.
7. These yarns are used in smart textiles.
8. used in conductive textiles
9. Widely used in sarees
10. These fibers are extensively used for embellishing apparels, braids, draperies, laces, military uniform decorations, ribbons, table linens, etc.

## Care and Maintenance

Metallic fabrics should be professionally dry cleaned with perchlorethylene. The fabric should be hand cleaned with woolite and cold water, and should never be bleached. Like other

synthetic fabrics, metallic fabrics should be ironed at the lowest setting, without using a steam iron.

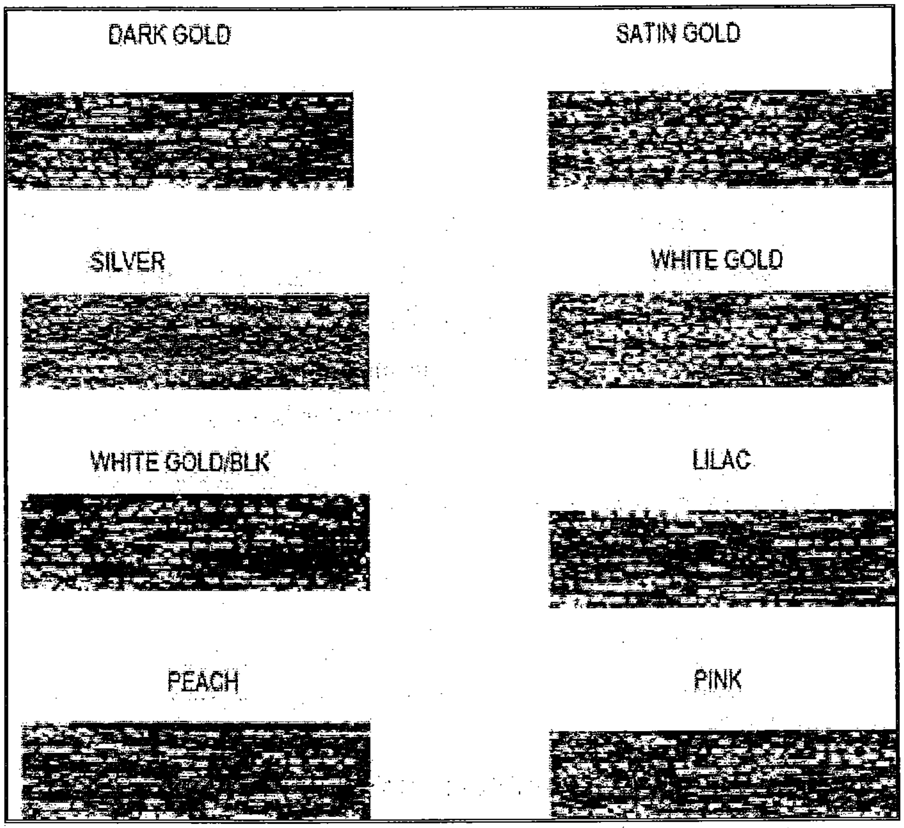
## New Developments

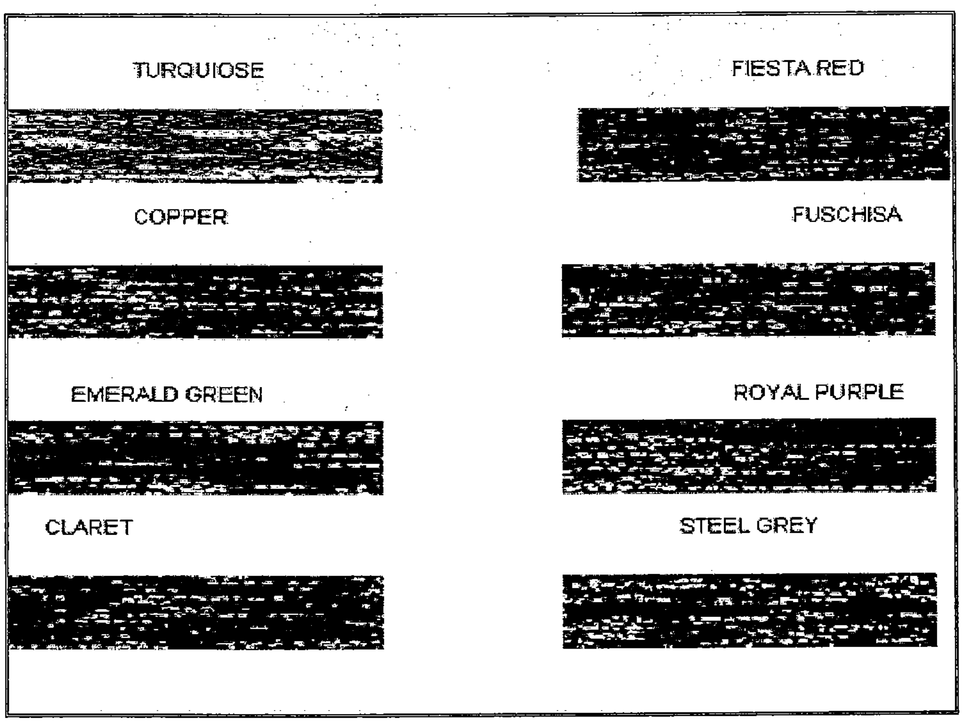
- Multi-Functional Textiles
- Sensing yarn, woven/knitted into garments
- Intelligent textile applications
- Heatable textiles as the heating element
- Conductive seam ribbons for Clean room garments.
- Stimulation electrodes knitted into garments.
- Weavable /knittable lead wires
- Heatable textiles.
- EMI Shielding wall-coverings and other textile structures

## Some Of Manufacturing Brands Of Metal Yarns

| | |
|---|---|
| Dow Chemical Co. | Lurex |
| Fairtex Corp. | Fairtex |
| Melton Corp. | Melton |
| Reynolds Metals Co. | Re Aluminum |
| Standard Yarn Mills | Lame |
| Sildorex SA,France | Lurex C, Lurex TE. |

## Some Of Lurex Brand Yarns


DARK GOLD
SATIN GOLD
SILVER
WHITE GOLD
WHITE GOLD/BLK
LILAC
PEACH
PINK


TURQUIOSE
FIESTA RED
COPPER
FUSCHISA
EMERALD GREEN
ROYAL PURPLE
CLARET
STEEL GREY

## Technical Data Sheet For Lutex Yarn

| LUREX GENERAL TECHNICAL DATA SHEET | | | |
|---|---|---|---|
| TEST | CONDITIONS | TEMP./TIME | RESULT |
| Laundry | 0,5% (5gr./liter) soap | 40°C 20 min. | OK |
| Dry cleaning | Perchloretylene 100% | 20°C 30 min. | OK |
| Ironing | | 135 °C, 15 sec. | OK |
| Hot water | | 70 °C, 30 min. | OK |
| Steam | | 100 °C 10 min. | OK |
| Dry heating | | 100 °C, 60 sec. | OK |
| Scouring | 1-2 gr/litre detergent only | 70 °C 15 min. | NO |
| Overdye wool and nylon | 1 gr./litre acetic acid, X% acid dyestuff | 90 °C 30 min. | NO |
| Bleaching | Sodium hydrosulfite 2,0 gr./liter | 70-80°C 30 min. | NO |
| Bleaching | Soda ash 0.5g/litre | 70-80°C 30 min. | NO |
| Bleaching | Ph 9, 30% hydrogen peroxide | 70-80°C 30 min. | NO |
| Bleaching | 10% sodium hydroclorite 40 gr./litre | 70-80°C 30 min. | NO |
| Caustic soda | | 28 Be' 21°C | NO |

## Conclusions

The metallic fibers and yarns have taken the textiles to the next level in technical textiles more specifically in conductive and smart textile materials. The metal fibers and yarns have made the entry into the fiber and fashion industries. Besides aesthetic effects, they also provide stability to the structure, electromagnetic shielding and wearable textiles materials are produced from the metallic fibres and yarns. In future, these applications are expected to increase with ever-increasing use of the electronic goods and personal protection devices.

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6. www.lurex.com

# BISFA

The International Bureau For The Standardization Of Man-Made Fibres

# Terminology of man-made fibres

**2009 Edition**

(replaces the 2006 edition)

BISFA

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Mr. P. LATZKE, of Acordis, Germany (Chairman of the Terminology Working Group)
Dr. A. KRIEGER, Secretary General of BISFA
Mr. B. ERGUN, of DuPontSA, Turkey
Mr. A. GOMES DA SILVA, of Fisipe, Portugal
Dr. O. JOHN, of DuPont de Nemours International, Switzerland
Mr. Ph. LAPERSONNE, of Rhodia Performance Fibres, France
Mrs. U. PLIETE, of Bayer Faser, Germany
Dr. F. PREZZAVENTO, of Assofibre, Italy
Mr. Ch. RAMSAUER, of Lenzing, Austria
Mrs. J. ŠKRHOVÁ, of Spolana, Czech Republic
Mr. B. TABOR, of Acordis, the Netherlands
Mrs. A. WHINERAY, of Acordis, UK

A revision of the booklet was started in 2005 and completed in 2006.

At the beginning of 2007, BISFA decided to revise the 2006 edition recognizing the important change in business scope occurred in the last two decades in the man-made fibres industry towards technical textiles and nonwovens.

BISFA wishes to acknowledge and thank the members of the Standards for Fibres and Textile Committee for their contribution to this revision and especially the following individuals :

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Mrs. K. KOWOL, of Advansa, Germany
Mr. C. RAMSAUER, of Lenzing , Austria
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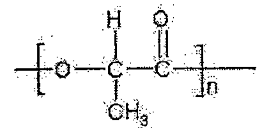
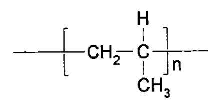
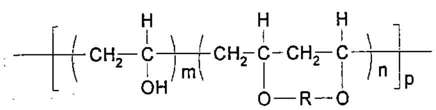
# CONTENTS





13-367-CBP-AR000308

SA000400

| | | |
|---|---|---|
| **Polylactide** | Fibre formed of linear macromolecules having in the chain at least 85% (by mass) of lactic acid ester units derived from naturally occurring sugars , and which has a melting temperature of at least 135°C |  |
| **polypropylene**[1] | Fibre composed of linear macromolecules made up of saturated aliphatic hydrocarbon units in which one carbon atom in two carries a methyl side group, generally in an isotactic configuration and without further substitution. | Polypropylene  |
| **vinylal** | Linear macromolecules of poly (vinyl alcohol) with different levels of acetalization | Acetalized poly(vinyl alcohol)  Where n > 0 |

## 1.4 Generic classification of inorganic fibres

| Generic name | Distinguishing attribute |
|---|---|
| **Carbon** | Fibre containing at least 90% by mass of carbon obtained by thermal carbonization of organic fibre precursors |
| **glass** | Fibre, in textile form, obtained by drawing molten glass. |
| **ceramic** | Fibre, in textile form, obtained from ceramic materials |
| **metal**[2] | Fibre obtained from metal |

1 Forms part of the polyolefins class

2 Fibres can be coated with metals, in which case they are described as "metallized fibres" and not "metal fibres"

# Textiles

concepts and principles

second edition

Virginia Hencken Elsasser
Centenary College

Fairchild Publications, Inc.
New York

Because glass fiber is very brittle, it must be cleaned very carefully. Glass is nonabsorbent, so it does not get dirty in the usual sense, but it does get dusty and dingy. Hand washing or vacuuming is recommended.

### *Metal*

The metals most commonly used to make metal fibers are carbon steel, stainless steel, and low-alloy steels, aluminum, iron nickel, and cobalt-based superalloys. There are three methods to produce metallic fibers:

1. The fibers are drawn from a metal rod.
2. Thin sheets of metal are laminated between layers of acetate or polyester film and then cut into fine strips.
3. Aluminum is vaporized under high pressure, deposited on polyester film, and then cut into fine strips.

Research into the use of stainless-steel fibers began in 1960. These fibers are frequently used in carpets to control static electricity because the metal conducts electrical charges and static does not build up. Only a small amount, 1 to 3 percent, of metallic fiber is needed.

Metallic fibers have long been used to decorate clothing. Originally, thin strips of gold and silver were used. They were fragile and expensive, however, and silver threads tarnished. Now, aluminum-, steel-, iron-, nickel-, and cobalt-based superalloys are used.

In industry, metallic fibers are used not only to control static electricity but also to create tire cord, wiring, and cabling. They are also used in heart surgery.

In apparel and furnishings, metallic fibers add a decorative touch to swimwear, eveningwear, tablecloths, sweaters, and accessories.

Most metallic fibers can be washed or dry-cleaned. Vaporized or laminated metallic fibers are heat-sensitive, so only low ironing temperatures can be used because high heat melts the plastic film.

### *Saran*

Saran is primarily used in industry and agriculture. In agriculture it is used to provide shade for young plants. Some of its other end uses include webbing and upholstery for patio furniture, upholstery for public transit vehicles, and flame-resistant draperies. It is no longer produced in the United States.

Because saran is normally spun in very large denier, resulting fabrics tend to be stiff and have very poor drape. In general, saran is:

- Strong
- Heavier than most synthetics (high specific gravity)
- Abrasion resistant

*Slit Film*

**Slit film yarns**, or *tape yarns*, are created when films or thin sheets of polymer are extruded, cooled, and then slit into narrow tapes. The tapes may be stretched to improve strength. Lurex® is a slit film yarn with a metallic appearance. It is made when a thin sheet of aluminum is laminated between two layers of polymer film and then cut into strips. Sometimes a metallized polyester film is used in place of the aluminum sheet. (Laminated fabrics are discussed more fully in Chapter 10.) End uses for slit film yarns include carpet backing, bagging, and decorative yarns.

*Yarn Wrapping*

Yarns can be created by wrapping a bundle of fibers with filament or staple fibers. They can also be wrapped with a soluble fiber. These yarns are also called **fasciated yarns**. There are three methods to create wrapped yarns: air jet, hollow-spindle, and core spinning.

AIR JET

In air-jet spinning a sliver is fed into a machine that force jets of air against the sliver. This causes the outer fibers to form a layer that wraps the inner fibers. In general, air-jet yarns are less compact, softer, and have better abrasion resistance that ring-spun or open-end yarns. They are used in furnishings and bedding.

HOLLOW-SPINDLE

In hollow-spindle spinning a sliver is fed through a hollow spindle where it is wrapped by a filament yarn. Sometimes the filament yarn is made from a soluble fiber. When the soluble fiber is removed through washing, the resulting yarn has no twist and is very absorbent. These yarns are used in toweling.

CORE SPINNING

Core-spun yarns are made by spinning a sheath of staple fibers around a filament core. Covered yarns are made by wrapping a core yarn with another yarn. Polyester/cotton core-spun sewing thread has a polyester core with a cotton cover.

*Network Yarns*

**Network yarns** are made by drawing a foamed polymer. As the foam is stretched, it breaks into individual fibers that are attached to one another. These yarns are bulky but lack strength. (Foams are discussed more fully in Chapter 10.)

Research continues to develop innovative methods of yarn formation.

**Blending**

Modern blended yarns have been available since the early 1950s when acrylic/cotton and polyester/cotton fabrics were introduced. Blending can be done during:

# Polymers: Fibers and Textiles, A Compendium

ENCYCLOPEDIA REPRINT SERIES

Editor: Jacqueline I. Kroschwitz

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standard packages for subsequent textile processing. Staple-length glass fibers, sometimes known as blown fibers, are manufactured by a somewhat different process from that used for other synthetic fibers. Upon extrusion, the continuous filaments of glass are subjected to the action of high-pressure steam jets which attenuate the glass filaments just prior to solidification, and break them up into staple lengths. Some staple glass fiber is processed into textile spun yarns, but a great deal of this material is used in bat or web form for filtration and insulation.

The outstanding properties of glass fibers are their chemical and thermal resistance, nonflammability, and inertness to microbial degradation. Glass fibers have extremely high electrical resistance and are dimensionally stable when exposed to elevated temperatures. The filaments and staple fibers are strong, although inextensible and quite brittle. In comparison with the more common textile fibers, they are dense, with a specific gravity of ~2.5. Glass fibers absorb virtually no moisture from the atmosphere, and their mechanical properties are nearly identical under wet and dry conditions.

Glass fibers have no affinity for any of the common textile dyes, but they can be colored by incorporating a suitable pigment into the molten glass before extrusion. Another method of coloring glass fiber in fabric form is by padding a latex or synthetic resin on the fabric which is substantive to the glass fiber and which will be capable of accepting one of the standard classes of dyes. In addition to providing dye sites, the resin and other surface-coating agents protect the fiber against abrasion. The development of these glass-fiber surface additives has enabled many successful applications of continuous and spun yarns in industrial and apparel products.

Both blown-glass fibers (short staple length) and continuous-filament-glass yarns can be used as reinforcements in thermosetting and thermoplastic matrices of composites. The chemical and physical structure of the glass fiber surface is critical in the development of strong and effective bonding between the fiber and matrix. Chemical modification treatments of glass fiber surfaces improve interfacial adhesion. A common treatment involves silane coupling agents (qv) which are most effective with epoxy thermosetting resins (211). Glass yarns are also used as reinforcements in pneumatic tires.

**Metallic Fibers.** Fibers and yarns can also be produced from metallic substances. For example, a plastic-coated aluminum fiber is a common metallic yarn. An aluminum sheet or foil is coated on both sides with a cellulose acetate–butyrate or a polyester plastic and cut into filaments of desired dimensions. Such metallic yarns are used primarily for decorative purposes. Metallic fibers are also manufactured in continuous form by repeated attenuation and drawing through diamond and tungsten dies. It is possible to weave traditional textile fabrics from steel filaments. Such filaments are expensive and are used only in special applications.

**Other Inorganic Fibers.** A number of fibers have been developed with inorganic lattice structures. Inorganic fibers (qv) are being made from alumina, silica, silicon carbide, boron nitride, and boron carbide. These fibers are extremely strong, although inextensible, and are intended for ultrahigh temperature uses. One method of manufacture involves the extrusion of a cellulose inorganic filament by the standard viscose process. These filaments are then ignited and sintered to remove the cellulosic component.

CONFIDENTIAL

[redacted]

13-367 CBP AR000374

CONFIDENTIAL

[redacted]





... were carried out in accordance with the procedures and provisions detailed in the Vartest Quality ... 17025:2005

CONFIDENTIAL

[redacted]



...accordance with the procedures and provisions detailed in the Vartest Quality

[redacted]

13-367 CBP AR000389

NEVILLE PETERSON LLP

[redacted]

U.S. Department of Homeland Security
U.S. Customs and Border Protection
One Penn Plaza, 10th Floor
New York, NY 10119

U.S. Customs and Border Protection

APR 1 3 2012

N196161

CLA-2-61:OT:RR:NC:N3:356

CATEGORY: Classification

TARIFF NO.: 6110.30.3053

Ms. Margaret Polito
222 Riverside Drive
Suite 14E
New York, NY 10025

RE: The tariff classification of a men's knit pullover from China.

Dear Ms. Polito:

In your letter dated December 5, 2010, you requested a tariff classification ruling on behalf of Best Key Trading Limited of Hong Kong. Your sample was destroyed during laboratory analysis and cannot be returned.

Style JC001 is a men's pullover garment that features a V-neckline with a rib knit spread collar (Johnny collar); short, hemmed sleeves; and a straight, hemmed bottom. The finely knit fabric measures 30 stitches per 2 centimeters counted in the horizontal direction.

Although you request classification of the garment under subheading 6105.90.8030, Harmonized Tariff Schedule of the United States (HTSUS), which provides for men's or boys' knit shirts, of other textile materials, subject to man-made fiber restraints, Customs and Border Protection laboratory analysis has determined that the fabric of Style JC001 is composed wholly of polyester yarns.

Consequently, the applicable subheading for Style JC001 will be 6110.30.3053, HTSUS, which provides for: sweaters, pullovers, sweatshirts, waistcoats (vests) and similar articles, knitted or crocheted: of man-made fibers: other: other: other: other: men's or boys': other. The rate of duty is 32% ad valorem.

Duty rates are provided for your convenience and are subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided on the World Wide Web at

http://www.usitc.gov/tata/hts/.

This ruling is being issued under the provisions of Part 177 of the Customs Regulations (19 C.F.R. 177). A copy of this ruling letter or the control number indicated above should be provided with the entry documents filed at the time this merchandise is imported.

If you have any questions regarding this ruling, contact National Import Specialist Mary Ryan at 646-733-3271.

Sincerely,

Thomas J. Russo
Director,
National Commodity Specialist Division

# PROPOSED REVOCATION OF RULING LETTER AND PROPOSED REVOCATION OF TREATMENT RELATING TO THE TARIFF CLASSIFICATION OF A "JOHNNY COLLAR" PULLOVER GARMENT

**AGENCY:** U.S. Customs and Border Protection; Department of Homeland Security.

**ACTION:** Notice of revocation of a ruling letter and proposed revocation of treatment relating to the tariff classification of a polyester "Johnny Collar" pullover.

**SUMMARY:** Pursuant to section 625(c), Tariff Act of 1930 (19 U.S.C. 1625 (c)), as amended by Section 623 of Title VI (Customs Modernization) of the North American Free Trade Agreement Implementation Act (Pub.L. 103–182, 107 Stat. 2057), this notice advises interested parties that Customs and Border Protection (CBP) proposes to revoke New York Ruling Letter (NY) N196161, dated April 13, 2012, with regard to the tariff classification of a polyester polyester "Johnny Collar" pullover under the Harmonized Tariff Schedule of the United States (HTSUS). CBP also proposes to revoke any treatment previously accorded by CBP to substantially identical transactions. Comments are invited on the correctness of the proposed action.

**DATES:** Comments must be received on or before May 20, 2013.

**ADDRESSES:** Written comments are to be addressed to Customs and Border Protection, Office of International Trade, Regulations and Rulings, Attention: Trade and Commercial Regulations Branch, 799 9th Street, N.W. 5th Floor, Washington, D.C. 20229–1179. Submitted comments may be inspected at Customs and Border Protection, 799 9th Street N.W., Washington, D.C. 20229 during regular business hours. Arrangements to inspect submitted comments should be made in advance by calling Mr. Joseph Clark at (202) 325–0118.

**FOR FURTHER INFORMATION CONTACT:** Claudia Garver, Tariff Classification and Marking Branch: (202) 325–0024

**SUPPLEMENTARY INFORMATION:**

## Background

On December 8, 1993 Title VI (Customs Modernization) of the North American Free Trade Agreement Implementation Act (Pub. L. 103–182, 107 Stat. 2057) (hereinafter "Title VI"), became effective. Tile VI amended many sections of the Tariff Act of 1930, as amended, and related laws. Two new concepts which emerge from the law are

"**informed compliance**" and "**shared responsibility**." These concepts are premised on the idea that in order to maximize voluntary compliance with customs laws and regulations, the trade community needs to be clearly and completely informed of its legal obligations. Accordingly, the law imposes a greater obligation on CBP to provide the public with improved information concerning the trade community's responsibilities and rights under the customs and related laws. In addition, both the trade and CBP share responsibility in carrying out import requirements. For example, under section 484 of the Tariff Act of 1930, as amended (19 U.S.C. §1484), the importer of record is responsible for using reasonable care to enter, classify and value imported merchandise, and to provide any other information necessary to enable CBP to properly assess duties, collect accurate statistics and determine whether any other applicable legal requirement is met.

Pursuant to section 625 (c)(1), Tariff Act of 1930, as amended (19 U.S.C. 1625 (c)(1)), this notice advises interested parties that CBP is proposing to revoke one ruling letter pertaining to the tariff classification of a polyester pullover garment. Although in this notice, CBP is specifically referring to the revocation of New York Ruling Letter N196161, dated April 13, 2012 (Attachment A), this notice covers any rulings on this merchandise which may exist but have not been specifically identified. CBP has undertaken reasonable efforts to search existing databases for rulings in addition to the ones identified. No further rulings have been found. Any party who has received an interpretive ruling or decision (i.e., ruling letter, internal advice memorandum or decision or protest review decision) on the merchandise subject to this notice should advise CBP during this notice period.

Similarly, pursuant to section 625 (c)(2), Tariff Act of 1930, as amended (19 U.S.C. 1625 (c)(2)), CBP proposes to revoke any treatment previously accorded by CBP to substantially identical transactions. Any person involved in substantially identical transactions should advise CBP during this notice period. An importer's failure to advise CBP of substantially identical transactions or of a specific ruling not identified in this notice, may raise issues of reasonable care on the part of the importer or its agents for importations of merchandise subsequent to the effective date of the final notice of this proposed action.

In NY N196161, CBP classified the "Johnny Collar" pullover shirt in subheading 6110.30.30, HTSUS, as a (knitted or crocheted) pullover of man-made fibers. CBP maintains the correctness of this classification. However, the holding in NY N196161 is contrary to a prior ruling, NY N187601, dated October 25, 2011, which classified the yarn from which the subject pullover is made in heading 5605,

HTSUS, as a metalized yarn. A knitted or crocheted pullover made wholly of metalized yarn would be classified in subheading 6110.90.90. Hence, the classification of the "Johnny Collar" pullover in subheading 6110.30.30, HTSUS, contrary to NY N187601, was not in compliance with 19 U.S.C. §1625(c)(1). NY N196161 is therefore revoked.

Pursuant to proposed Headquarters Ruling Letter (HQ) H202560, CBP is also proposing to revoke NY N187601 in order to reflect the correct classification of the polyester yarn in heading 5402, HTSUS. Entries of the "Johnny Collar" pullover garment made after the effective date of HQ H202560 will therefore be classified in subheading 6110.30.30, HTSUS, as a pullover of polyester yarn. So long as NY N187601 is in effect, however, the Johnny Collar pullover garment is classified in subheading 6110.90.90, HTSUS, consistent with NY N187601.

Pursuant to 19 U.S.C. 1625(c)(1), CBP proposes to revoke NY N196161, and to revoke or modify any other ruling not specifically identified, according to the analysis contained in proposed Headquarters Ruling Letter (HQ) H226262, set forth as Attachment B to this document. Additionally, pursuant to 19 U.S.C. 1625(c)(2), CBP is proposing to revoke any treatment previously accorded by CBP to substantially identical transactions.

Before taking this action, consideration will be given to any written comments timely received.

Dated: April 8, 2013

Ieva K. O'Rourke
*for*
Myles B. Harmon,
*Director*
*Commercial and Trade Facilitation Division*

Attachments

[ATTACHMENT A]

N196161

April 13, 2012
CLA-2–61:OT:RR:NC:N3:356
CATEGORY: Classification
TARIFF NO.: 6110.30.3053

Ms. Margaret Polito
222 Riverside Drive
*Suite 14E*
*New York, NY 10025*

RE: The tariff classification of a men's knit pullover from China.

Dear Ms. Polito:

In your letter dated December 5, 2010, you requested a tariff classification ruling on behalf of Best Key Trading Limited of Hong Kong. Your sample was destroyed during laboratory analysis and cannot be returned.

Style JC001 is a men's pullover garment that features a V-neckline with a rib knit spread collar (Johnny collar); short, hemmed sleeves; and a straight, hemmed bottom. The finely knit fabric measures 30 stitches per 2 centimeters counted in the horizontal direction.

Although you request classification of the garment under subheading 6105.90.8030, Harmonized Tariff Schedule of the United States (HTSUS), which provides for men's or boys' knit shirts, of other textile materials, subject to man-made fiber restraints, Customs and Border Protection laboratory analysis has determined that the fabric of Style JC001 is composed wholly of polyester yarns.

Consequently, the applicable subheading for Style JC001 will be 6110.30.3053, HTSUS, which provides for: sweaters, pullovers, sweatshirts, waistcoats (vests) and similar articles, knitted or crocheted: of man-made fibers: other: other: other: other: men's or boys': other. The rate of duty is 32% ad valorem.

Duty rates are provided for your convenience and are subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided on the World Wide Web at http://www.usitc.gov/tata/hts/.

This ruling is being issued under the provisions of Part 177 of the Customs Regulations (19 C.F.R. 177). A copy of this ruling letter or the control number indicated above should be provided with the entry documents filed at the time this merchandise is imported.

If you have any questions regarding this ruling, contact National Import Specialist Mary Ryan at 646–733–3271.

*Sincerely,*

Thomas J. Russo
*Director,*
*National Commodity Specialist Division*

[ATTACHMENT B]

HQ H226262
CLA-2 OT:RR:CTF:TCM H226262 CkG
CATEGORY: Classification
TARIFF NO: 6110.90.90

Mr. John M. Peterson
Neville Peterson, LLP
*17 State Street 19th Floor*
*New York, NY 10004*

RE: Reconsideration of New York Ruling Letter N196161; classification of "Johnny Collar" pullover garment

Dear Mr. Peterson:

This is in response to your request of June 27, 2012, for the reconsideration of New York Ruling Letter (NY) N196161, issued to Ms. Margaret Polito on behalf of Best Key Textiles on April 13, 2012. This ruling was issued contrary to section 625(c)(1), Tariff Act of 1930 (19 U.S.C. §1625(c)(1)), and is hereby revoked.

NY N196161 described the subject merchandise as follows:

> Style JC001 is a men's pullover garment that features a V-neckline with a rib knit spread collar (Johnny collar); short, hemmed sleeves; and a straight, hemmed bottom. The finely knit fabric measures 30 stitches per 2 centimeters counted in the horizontal direction.

The garment at issue is made from a polyester yarn which is manufactured by Best Key by mixing metal powder into a polyester slurry prior to extrusion of the yarn. This yarn was the subject of a prior ruling, NY N187601, dated October 25, 2011. In NY N187601, CBP classified the Best Key yarn in heading 5605, HTSUS, which provides for "Metalized yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal."

NY N187601 described the subject yarn as follows:

> two spools of…polyester filament yarn, one of which you state is combined with aluminum powder and the other, zinc powder. Both, you state, contain titanium. You state that the aluminum or zinc powder is added to the slurry that is extruded to create the filaments.

**ISSUE:**

Whether the instant "Johnny Collar" pullover shirt is classified in subheading 6110.30.30, HTSUS, as a pullover of polyester yarn, or in subheading 6110.90.90, HTSUS, as a pullover of "other" textile material.

**LAW AND ANALYSIS:**

Merchandise is classifiable under the HTSUS in accordance with the General Rules of Interpretation (GRIs). GRI 1 provides that classification shall be determined according to the terms of the headings and any relative section or chapter notes and, provided such headings or notes do not otherwise require, according to the remaining GRIs 2 through 6. GRI 6, HTSUS, requires that the GRI's be applied at the subheading level on the understand-

ing that only subheadings at the same level are comparable. The GRI's apply in the same manner when comparing subheadings within a heading.

The HTSUS provisions under consideration are as follows:

| | |
|---|---|
| 6110: | Sweaters, pullovers, sweatshirts, waistcoats (vests) and similar articles, knitted or crocheted: |
| 6110.30: | Of man-made fibers: |
| | Other: |
| | Other: |
| 6110.30.30: | Other... |
| 6110.90 | Of other textile materials: |
| 6110.90.90: | Other.... |

* * * *

In NY N196161, CBP classified the "Johnny Collar" pullover shirt in subheading 6110.30.30, HTSUS, as a (knitted or crocheted) pullover of man-made fibers. You state that this ruling is inconsistent with our conclusion in NY N187601, dated October 25, 2011, that a polyester monofilament yarn produced by Best Key was classified in heading 5605, HTSUS, as a metalized yarn. You argue that because CBP concluded in NY N187601 that the yarn at issue therein was a metalized yarn, then the Best Key "Johnny Collar" shirt, which is made from that yarn, must be considered to be made of metalized yarn and therefore classified in subheading 6110.90.90, HTSUS, as a knitted or crocheted pullover of "other" textile materials (i.e., not of polyester).

Pursuant to proposed Headquarters Ruling Letter (HQ) H202560 (proposing to revoke NY N187601), we find the "Johnny Collar" pullover is correctly classified in subheading 6110.30.30, HTSUS. In HQ H202560, we conclude that the yarn comprising the pullover is not classified in heading 5605, HTSUS, as a metalized yarn, but rather as a polyester yarn of heading 5402, HTSUS. The pullover garment is therefore correctly classified in subheading 6110.30.30, HTSUS, as a pullover of polyester yarn, and not, as you claim, in subheading 6110.90.90, HTSUS, as a pullover of "other" textile material (i.e., of metalized yarn).

However, because NY N187601 was in effect at the time NY N196161 was issued, the classification of the Best Key "Johnny Collar" pullover in subheading 6110.30.30, HTSUS, contrary to NY N187601, was not in compliance with 19 U.S.C. §1625(c)(1). NY N196161 is therefore revoked. So long as NY N187601 is in effect, the Best Key garment remains classified in subheading 6110.90.90, HTSUS, consistent with NY N187601. Entries of the Best Key "Johnny Collar" pullover garment made after the effective date of HQ H202560 will be classified in subheading 6110.30.30, HTSUS, as a pullover of polyester yarn.

**HOLDING:**

The instant "Johnny Collar" pullover garment is classified in heading 6110, HTSUS, specifically subheading 6110.30.30, which provides for "Sweaters, pullovers, sweatshirts, waistcoats (vests) and similar articles, knitted or crocheted: Of man made fibers: Other: Other: Other." The 2013 general, column one rate of duty is 32% *ad valorem*.

Duty rates are provided for your convenience and subject to change. The text of the most recent HTSUS and the accompanying duty rates are provided online at *www.usitc.gov/tata/hts/*.

**EFFECT ON OTHER RULINGS:**

NY N196161, dated April 13, 2012, is hereby revoked.

*Sincerely,*

Myles B. Harmon,
*Director,*
*Commercial and Trade Facilitation Division*

able to quality cotton as washed cotton under the U.S. cotton dust standard, sometimes can alter the wax surface and adversely affect textile processing without lowering the amount of wax on the fiber [68]. Wax is detrimental in the chemical processing of cotton yarns and fabrics because it interferes with wetting of the fiber and penetration of reagents. If the wax layer is disrupted, for example, by microbiological action due to weathering, it can affect the sizing operation. The sizes will penetrate too far into the fiber and the fiber will pick up too high a level of size. The cotton wax is removed during normal scouring that is part of normal preparation for dyeing and finishing.

Sugars (about 0.1–1.0% of the fiber dry weight) in cotton can be divided into two general categories, plant sugars and insect sugars [69]. Plant sugars occur as a result of the normal growth process and vary in concentration depending on area of growth, weathering, microbial activity, and cotton maturity. The levels of these sugars on cotton are determined by one of several simple sugar test methods [70]. The plant sugars are composed primarily of the monosaccharides, glucose and fructose, and small quantities of the disaccharide, sucrose [69]. Insect sugars, commonly known as honeydew, most often come from aphids and whiteflies and are usually randomly deposited as spots or specks on the cotton causing stickiness [71]. Stickiness from high levels of either plant or insect sugars often makes processing of the cotton lint very difficult. Insect sugars identified include: melezitose [72,73], a trisaccharide; turanose [72,73], a disaccharide; trehalulose [74–77], a disaccharide; and bemisiose [78], a trisaccharide. Arabitol and mannitol (monosugar alcohols), products of fungal activity, can sometimes be detected and are indicators of microbial damage to cotton [79]. The sugars are readily removed by water. They are removed by the normal scouring and bleaching processes that are used for preparation of the fiber for dyeing and finishing.

Pectic substances (usually designed as pectin) are located mostly in the primary wall of the fiber and constitute about 0.7–1.2% of fiber dry weight. The method of pectin analysis has much to do with the percent pectin reported. Pectin occurs as free pectic acid (linear polymer of 1,4-D-galacturonic acid) and insoluble calcium, magnesium, and iron pectates. Removal of pectin does not significantly alter the tensile strength of the fiber and has little effect on yarn and fabric properties. Pectic substances are removed by the normal scouring and bleaching that is part of preparation for dyeing and finishing.

The organic acids in the raw fiber, exclusive of pectic acid, are mostly 1-malic (up to 0.5%) and citric (up to 0.07%) acids. Analyses indicate that other acids are present also, totaling some 0.3%, but these have not been identified. Organic acids are removed during normal scouring and bleaching.

The inorganic salts (phosphates, carbonates, and oxides) and salts of organic acids present in the raw fiber are reported as percent ash (about 1.2% of fiber dry weight). The ash components expressed are the oxides of the elements present (excluding chlorine, which is expressed as such). The ash itself is highly alkaline. The ash contents of cottons are highly variable in composition and quantity, arising from differences in soil and agricultural practices throughout the cotton-growing regions, as well as the field and handling procedures that affect deposition of material (plant parts and soil) on the fiber. As is the case with all growing plants, mineral salts are necessary for the development of the cotton plant. During the production of cotton, the plant absorbs potassium and other metals as normal nutrients. Metals are incorporated from the soil into plants as natural constituents. In addition to metals absorbed by plant tissue, soil and



plant parts may be deposited directly onto the lint, especially during harvesting. Ca, P, S, K, and Fe are plant part elements and Mg, Al, Si, Fe, Cr, Se, Hg, Ni, Cu, K, and Ca are soil element [80].

Recently Brushwood and Perkins [81] analyzed cottons from various growth areas, variety, and harvest season in the United States and several foreign countries for metal composition. Metal contents varied significantly between years and between growth areas. Potassium was the most abundant metal (2000–6500 ppm), followed by magnesium and calcium (400–1200 ppm); sodium (100–300 ppm); iron (30–90 ppm); zinc (1–10 ppm); manganese (1–10 ppm); and copper (1–10 ppm). Lead and cadmium were not detected (Table 9.3). In untreated cotton, arsenic levels are usually less than 1 ppm [82,83]. Silicon, chlorine, sulfur, and boron are detected sometimes in trace amounts.

Metals in cotton are of importance to processors because they can contribute to problems in yarn manufacturing, bleaching, and dyeing. Silicon as silica and other metals as oxides can cause frictional problems in rotor spinning and needle wear in knitting [81]. Peroxide bleaching can be affected by magnesium salts, and iron and copper can cause unleveling in bleaching [84]. Insoluble calcium and magnesium salts can interfere with dyeing [85] and copper can contribute to yellowness of finished denim goods [86]. Iron can contribute to a permanent brown or pink color of the fiber that affects dyeing [84]. The metals of potential concern in waste water effluents from textile dyeing and finishing are copper and zinc. The levels of these in cotton fiber are low enough so that they do not contribute significantly to effluent problems [24]. The metals



**Table 9.3** Metal Content of Cotton

| Metal | ppm |
|---|---|
| Potassium | 2000–6500 |
| Magnesium | 400–1200 |
| Calcium | 400–1200 |
| Sodium | 100–300 |
| Iron | 30–90 |
| Manganese | 1–10 |
| Copper | 1–10 |
| Zinc | 1–10 |
| Lead | n.d.[a] |
| Cadmium | n.d. |
| Arsenic | trace (<1)[b] |
| Phosphorous | 180–1000[c] |

[a] n.d. = not detected.
[b] From Ref. [82,83].
[c] Unpublished data L. N. Domelsmith, USDA, 1985-86, L. N. Domelsmith et al. Text. Res. J. 56(1), 14(1986), and Ref. [5], p. 74.
*Source*: Ref. [81].

Attachment 9
Lab Number NY2012099l
Date 05/31/2012
Analyst ML
Page 4 of 4

HQ 952934

July 19, 1993

CLA-2 CO:R:C:T 952934 NLP

CATEGORY: Classification

TARIFF NO.: 5211.32.0020; 5514.22.0020; 6211.32.0010 and 6211.33.0010

Mr. Joseph A. Amato
Maxwell Safety Products LTD.
20 Gilbert Avenue- Suite 101
Hauppauge, NY 11788

RE: Composite fabric made up of polyester, cotton and stainless steel fibers; coveralls; Legal Note 2(A) and 2(B) to Section XI; headings 5211, 5514, 6114 and 6211; Explanatory Notes to headings 5605, 6114, 6211 and Chapter 62; GRI 3(b); Explanatory Note (VIII) to GRI 3(b); essential character

Dear Mr. Amato:

This is in response to your letter dated October 27, 1992, in which you requested the tariff classification of a protective garment and the composite fabric used to manufacture this garment under the Harmonized Tariff Schedule of the United States (HTSUS). You submitted a sample of the fabric for our examination.

FACTS:

We submitted the sample of the fabric to the Customs laboratory for analysis. The laboratory analysis found that the sample is a 2 x 1 three-thread left hand twill woven fabric. It is composed of 47% staple polyester, 45% cotton and 8% stainless steel fibers. The fabric contains 21.2 single yarns per centimeter in the warp and 18.9 single yarns per centimeter in the filling. This material has been dyed a uniform color. In addition, you also informed us that the materials are broken down by value as follows: approximately 80% stainless steel fibers, 10% polyester and 10% cotton.

In a telephone conversation with our New York office, you stated that the fabric is constructed of specialized yarns designated in the trade as "Naptex" yarns. These yarns are characterized by a central core of polyester staple fibers mixed with micro fiber stainless steel surrounded by cotton fiber.

This fabric will be used to manufacture garments that provide protection from microwave radiation. These garments are full coveralls with long sleeves and a full front zipper closure.

They will be worn in a variety of settings, for example, they will be worn by people who climb radio towers and by those who work in laboratories. You will be importing the raw material for the coveralls in bolts 100 meters by 1.5 meters and the finished coveralls themselves.

ISSUE:

What is the tariff classification of the subject woven fabric?

What is the tariff classification of the coveralls?

LAW AND ANALYSIS:

The classification of goods under the HTSUS is governed by the General Rules of Interpretation (GRI's), taken in order. GRI 1 provides that classification shall be determined according to the terms of the headings and any relative section or chapter notes. In the event that the goods cannot be classified solely on the basis of GRI 1, and if the headings and legal notes do not otherwise require, the remaining GRI's may be applied, taken in order.

ISSUE #1

The first issue we need to address in determining the classification of the fabric is whether the stainless steel fiber that constitutes 8% of the weight of the fabric is considered a textile material for classification purposes. Legal Note 2(B)(a) to Section XI, HTSUS, confers on metal in certain forms the status of a textile material when used in the manufacture of woven fabric. Legal Note 2(A) and 2(B)(a) to Section XI state the following, in pertinent part:

(A) Goods classifiable in chapters 50 to 55 or in heading 5809 or 5902 and of a mixture of two or more textile materials are to be classified as if consisting wholly of that one textile material which predominates by weight over each other single textile material.

(B) For the purposes of the above rule:

(a) Gimped horsehair yarn (heading 5110) and metalized yarn (heading 5605) are to be treated as a single textile material the weight of which is to be taken as the aggregate of the weights of its components; for the classification of woven fabrics, metal thread is to be regarded as a textile material;

Therefore, we have to determine whether the metal fiber incorporated into this fabric can be characterized as "metalized yarns" or "metal thread."

In understanding the language of the HTS, the Harmonized Commodity Description and Coding System Explanatory Notes (ENs) may be utilized. The ENs, although not legally binding, comprise the official interpretation of the Harmonized System at the international level. The ENs to heading 5605 state, on page 777, in pertinent part:

> This heading covers:
>
> (1) Yarn consisting of any textile material (including monofilament, strip and the like and paper yarn) combined with metal thread or strip, whether obtained by a process of twisting, cabling or by gimping, whatever the proportion of metal present....
>
> (2) Yarn of any textile material (including monofilament, strip and the like, and paper yarn) covered with metal by any process. This category includes yarn covered with metal by electro-deposition, or by giving it a coating of adhesive (e.g., gelatin) and then sprinkling it with metal powder (e.g., aluminum or bronze).

The ENs further state that this heading includes products consisting of a core of metal foil or plastic film coated with metal dust sandwiched between two layers of plastic.

It is our position that the stainless steel fibers that are combined with the textile fibers to compose this fabric are not considered "metalized yarns" classifiable in heading 5605, HTSUS. This fabric does not consist of yarns combined with metal thread or strip, nor is it a yarn covered with metal by any process. Moreover, the core of the fabric is not metal foil and there is no plastic present.

Furthermore, the metal fibers in this fabric are not classifiable as "metal thread". They are short fibers that do not form a continuous strand and they would not be within the common and commercial meaning of metal thread. Thus, it is our opinion that the metal fibers in the fabric are neither "metalized yarn" classifiable in heading 5605, HTSUS, nor are they classifiable as "metal thread". Therefore, the stainless steel fibers are not considered to be a textile material for purposes of classifying this fabric.

The subject fabric is a composite good as it is composed of textile materials and metal fibers. GRI 2 addresses classification of composite goods and states the following, in pertinent part:

> (b) ... Any reference to goods of a given material or substance shall be taken to include a reference to goods consisting wholly or partly of such material or substance. The classification of goods consisting of

more than one material or substance shall be according to the principles of rule 3.

GRI 3 states, in pertinent part, the following:

When, by application of rule 2(b) or for any other reason, goods are, prima facie, classifiable under two or more headings, classification shall be effected as follows:

(b) Mixtures, composite goods consisting of different materials or made up of different components, and goods put up in sets for retail sale, which cannot be classified by reference to 3(a), shall be classified as if they consisted of the material or component which gives them their essential character, insofar as this criterion is applicable.

EN VIII to GRI 3(b), page 4, states that:

(VIII) The factor which determines essential character will vary as between different kinds of goods. It may, for example, be determined by the nature of the material or component, its bulk, quantity, weight or value, or by the role of a constituent material in relation to the use of the goods.

In the instant case, the textile fiber portions of the fabric constitute the largest proportion of the fabric's weight and bulk. In fact, each type of textile fiber provides almost half of the fabric's weight and bulk. Together, their weight predominates by 92%. Moreover, while the metal fibers act to absorb the microwave radiation, it is the textile portions which provide the medium for these fibers and allow the fabric to be manufactured into a garment. Once a garment, the textile fibers

provide the comfort required of the wearing apparel. Thus, though the stainless steel fibers do have a higher value, it is our position based on their weight, bulk and the role they play, it is the textile portions of the material which represent the essential character of this fabric.

Pursuant to Legal Note 2(A) to Section XI, this fabric is classified in subheading 5514.22.0020, HTSUS, which provides for "[w]oven fabrics of synthetic staple fibers, containing less than 85 percent by weight of such fibers, mixed mainly or solely with cotton, of a weight exceeding 170 g/m squared: [d]yed: 3-thread or 4-thread twill, including cross twill, of polyester staple fibers: [n]ot napped."

In a telephone conversation with our New York office you stated that you intend to alter the fiber content of this fabric to consist of 50% cotton, 42% staple polyester and 8% stainless steel fiber. This fabric will be classifiable in

subheading 5211.32.0020, HTSUS, which provides for "[w]oven fabrics of cotton, containing less than 85 percent by weight of cotton, mixed mainly or solely with man-made fibers, weighing more than 200 g/m squared: [d]yed: 3-thread or 4-thread twill, including cross twill: [n]ot napped."

ISSUE #2

Chapter 62, HTSUS, provides for "[a]rticles of apparel and clothing accessories, not knitted or crocheted." The ENs to Chapter 62 state, on page 848, that "[t]his Chapter covers men's, women's or children's articles of apparel, clothing accessories and parts of apparel or of clothing accessories, made up of the fabrics (excluding wadding but including felt or nonwovens) of Chapters 50 to 56, 58 and 59."

Heading 6211, HTSUS, provides for "[t]rack suits, ski suits and swimwear; other garments." The ENs to heading 6211 state, on page 856, that the provisions of the EN to heading 61.14 concerning other garments apply, mutatis mutandis to articles of this heading. The ENs to heading 6114 state, on page 842, that the heading includes, inter alia, boiler suits (coveralls), smocks and other protective clothing of a kind worn by mechanics, factory workers, surgeons, etc....

As the core material which comprises the garment is classified in either Chapter 52 or 55, HTSUS, and the subject garment is described by the above ENs to heading 6114, this garment is classifiable in heading 6211, HTSUS. If the garment is made of the first type of fabric it is classifiable in subheading 6211.33.0010, HTSUS, which provides for "[t]rack suits, ski-suits and swimwear; other garments: [o]ther garments, men's or boys': of man-made fibers: [c]overalls...: [o]ther:

[m]en's." If the garment is manufactured from the second type of material, it will be classifiable in subheading 6211.32.0010, HTSUS, which provides for " [t]rack suits, ski-suits and swimwear; other garments: [o]ther garments, men's or boys': [o]f cotton: [c]overalls...: [o]ther: [m]en's."

HOLDING:

The fabric comprised of 47% staple polyester, 45% cotton and 8% stainless steel is classifiable in subheading 5514.22.0020, HTSUS, which provides for "[w]oven fabrics of synthetic staple fibers, containing less than 85 percent by weight of such fibers, mixed mainly or solely with cotton, of a weight exceeding 170g/m squared: [d]yed: 3-thread or 4-thread twill, including cross twill, of polyester staple fibers: [n]ot napped." The rate of duty is 17% ad valorem and the applicable textile category code is 617. A coverall made out of this fabric would be classifiable in subheading 6211.33.0010, HTSUS, which provides for "[t]rack suits, ski-suits and swimwear; other garments: [o]ther garments, men's or boys': of man-made fibers: [c]overalls...: [o]ther: [m]en's." The rate of duty is 17% ad valorem and the applicable textile category code is 659.

The second fabric material, which will be composed of 50% cotton, 42% staple polyester and 8% stainless steel fibers, is classifiable in subheading 5211.32.0020, HTSUS, which provides for "[w]oven fabrics of cotton, containing less than 85 percent by weight of cotton, mixed mainly or solely with man-made fibers, weighing more than 200 g/m squared: [d]yed: 3-thread or 4-thread twill, including cross twill: [n]ot napped." The rate of duty is 9.7% ad valorem and the applicable textile category code is 317. Provided the coverall is made out of this material, it would be classifiable in subheading 6211.32.0010, HTSUS, which provides for " [t]rack suits, ski-suits and swimwear; other garments: [o]ther garments, men's or boys': [o]f cotton: [c]overalls...: [o]ther: [m]en's." The rate of duty is 8.6% ad valorem and the applicable textile category is 359.

The designated textile and apparel categories may be subdivided into parts. If so, the visa and quota requirements applicable to the subject merchandise may be affected. Since part categories are the result of international bilateral agreements which are subject to frequent renegotiations and changes, to obtain the most current information available we suggest the importer check, close to the time of shipment, the Status Report on current Import Quotas (Restraint Levels), an internal issuance of the U.S. Customs Service which is updated weekly and is available for inspection at your local Customs office.

Due to the changeable nature of the statistical annotation (the ninth and tenth digits of the classification) and the restraint (quota/visa) categories, you should contact your local Customs office prior to importation of this merchandise to determine the current status of any import restraints or requirements.

Sincerely,

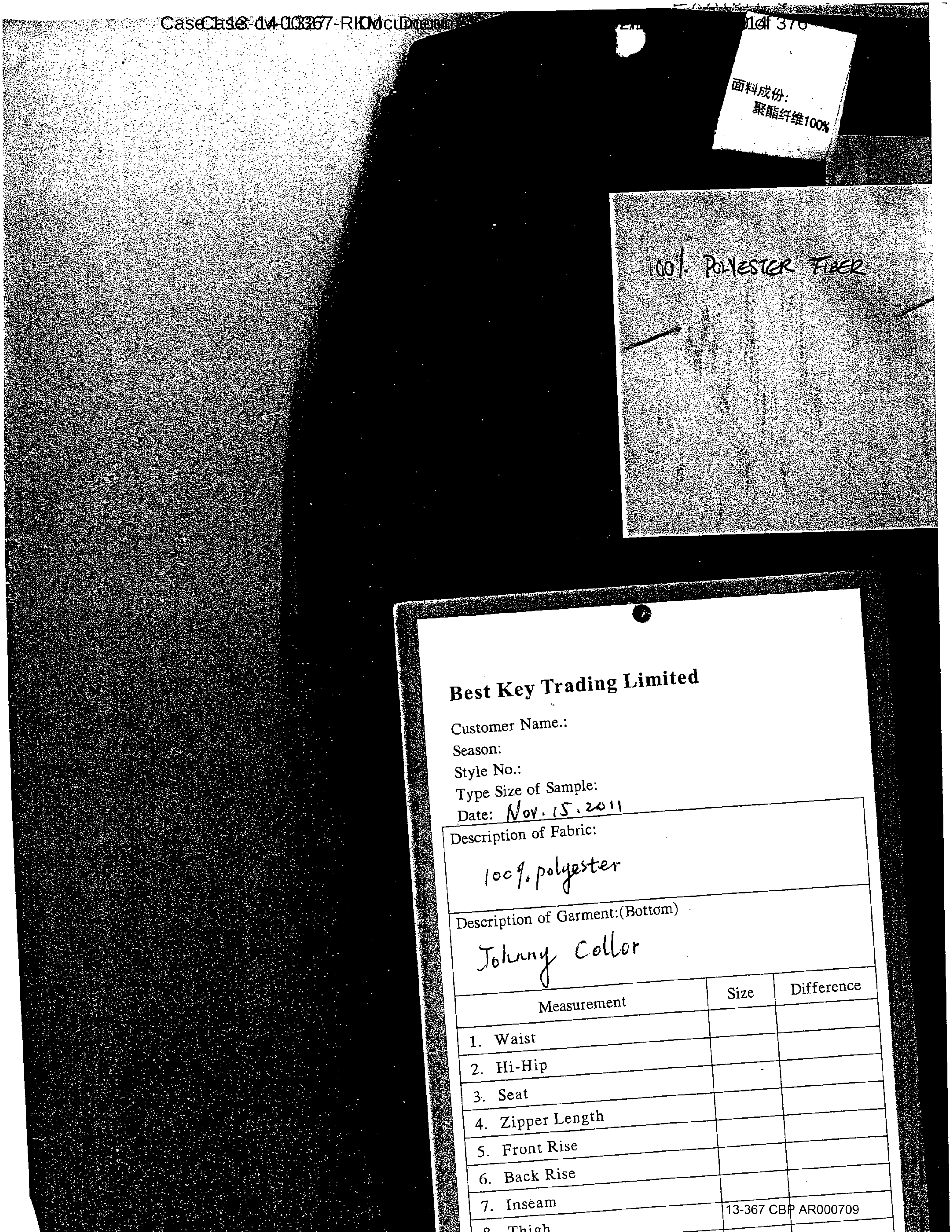
John Durant, Director
Commercial Rulings Division

[redacted]

[redacted]

[redacted]

[redacted]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Johnny Collor
Measurement
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Difference
1. Waist
2. Hi-Hip
3. Seat
4. Zipper Length
5. Front Rise
6. Back Rise
7. Inseam
8. Thigh

Case 1:14-00367 Document 63 Filed 12/02/13 Filed: 09/15/2014

Exhibit 5
to
H226262

## RYAN, MARY P

**From:** KONG, FUNG KING
**Sent:** Wednesday, April 11, 2012 4:19 PM
**To:** RYAN, MARY P
**Subject:** Polyester.

```
Traditional
Pīnyīn  English Definition   Simplified
HSK
聚酯纖維  *聚酯纖維* | 聚酯纖維* | *聚酯纖維 polyester fiber  聚酯纤维
```

[redacted]

## GARVER, CLAUDIA K

**From:** BAYER, MITCHEL S <MITCHEL.S.BAYER@CBP.DHS.GOV>
**Sent:** Tuesday, October 09, 2012 10:51 AM
**To:** ALDIR, ALFONSO; GARVER, CLAUDIA K; RYAN, MARY P; DUNAJSKI, MARIBETH
**Subject:** RE: U.S. Metallic Manufacturer

I just spoke to Mr. Wayne Etchells, who has been at Metlon since 1977. They n o longer manufacture the metallic yarns, but import them. When I described the Best Key process, with the amounts, and asked him if that creates a metalized yarn, he at first said, "Sounds like it." But then he said if that produces a metallic appearance . . . ." I told him that the point was not to create a metallic appearance, that the titanium dioxide was specifically added as a delusterant, and he said that it is not a metalized yarn." He said metalized yarns were always sought for decorative purposes, not ant-microbial applications.

He said, "They are adding metal, but not metalizing." [redacted]

Mitchel Bayer
National Import Specialist 351
646-733-3102

Please print ONLY when necessary. Recycle paper when appropriate.

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**From:** ALDIR, ALFONSO
**Sent:** Friday, October 05, 2012 3:26 PM
**To:** GARVER, CLAUDIA K; BAYER, MITCHEL S; RYAN, MARY P
**Subject:** U.S. Metallic Manufacturer

FYI - Maybe someone can contact a U.S. Manufacturer such as Metlon Corporation to either provide us with samples or data which they have regarding the metallic content of their yarns. I have pasted below their page on metallic yarns which describes their manufacturing process and use, along with their telephone number.

METLON® CORPORATION

133 Frances Ave. Cranston, RI 02910 T:(401)467-3435 Fax:(401)467-8720

Email: info@metlon.com

Metlon Home

Reflective Yarn

Reflective Roll Goods

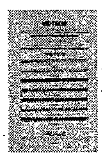
Reflective Narrow Fabrics

Custom Slitting

# Metallic Yarns

Metlon Corporation manufactures and stocks a wide variety of supported and non-supported metallic yarns. Starting in 1947, Metlon is one of only three manufacturers still producing metallic yarn in the United States. Metlon stocks laminated and non-laminated metallic yarns, supported or unsupported in thickness' of ½ mil and 1½ mil and widths from 1/128" and wider.

**Metlon Metallic Yarns**



click to enlarge

50NL - half mil non-laminated, metallized polyester film with protective lacquer on both sides. The lacquer is clear for silver and colored for gold and colors. Stocked in gold, silver and colors, supported and non-supported. Typical end uses:

- sweaters
- hosiery
- broad goods
- labels.

Download Product Data Sheet in PDF format.

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click to enlarge

150VS - 1½ mil polyester film with protective lacquer on both sides. The lacquer is clear for silver and colored for gold. Stocked in gold and silver. Special colors to order. Non-supported only. Typical end uses:

- braids
- trimmings.

View Product Data Sheet
Download in PDF format.

Click for available sizes.

## The Metallic Yarn Manufacturing Process

Metallic yarns start as rolls of films or laminations 30" or wider. These wide rolls are slit into narrow rolls 2" to 5" wide. These narrow rolls are gang slit across their entire width to micro widths from 1/128" (.0078") and wider and then taken up on plastic spools for shipment to textile mills.

There is a rainbow of colors available from red, blue, green, etc. to gold and silver. Brilliant, reflective colors which add decorative patterns to fabrics.

Supported yarns are made by wrapping single slit yarns with two ends of nylon. One end of nylon is wrapped clockwise and the other end is wrapped counterclockwise around the metallic yarn. Each nylon yarn has from 5 to 7 wraps to the inch. The most commonly used nylon is either 15 denier or 20 denier, but heavier deniers are used for special purposes. Supported yarns are put up on cones.

## Metallic Yarn Uses

Metallic yarns are woven, braided, and knit into many fashionable fabrics and trims. For additional variety, metallic are twisted with other fibers such as wool, nylon, cotton and synthetic blends to produce yarns which add novelty effects to the end cloth or trim. They make all textiles more attractive by adding sparkle.

At one time or another, metallic yarns have been used in just about every form of textiles. Some end uses have been in automotive fabrics, television front fabrics, bath towels and face cloths, clerical vestments, bathing suits, hosiery, upholstery, hat bands, etc. Also in theatrical clothing, theater back drops, doll clothing, banners and uniforms.

# Care of Fabrics With Metallic Yarns

Professional dry cleaning with perchlorethylene is preferred to laundering. Hand laundering with Woolite and cold water is the only suggested laundering method. Never with bleach.

Fabrics containing metallic yarns should be treated like all synthetic fabrics. Ironing should be at the lowest setting on the iron. If there is no thermostat on the iron, do not use that iron. Do not use steam when ironing metallic yarns.

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**CERTIFICATE OF SERVICE**

Marcella Powell hereby certifies under penalty of perjury that on this 12th day of September 2014, a copy of the foregoing Supplemental Appendix was filed electronically. This filing was served electronically to all parties by operation of the Court's electronic filing system.

Marcella Powell
/s/ Marcella Powell